



# THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

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No. 502 Dispur, Wednesday, 6th July, 2022, 15th Ashadha, 1944 (S. E.)

GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

DEPARTMENT OF HOUSING AND URBAN AFFAIRS

## NOTIFICATION

The 9th June, 2022

**No.UDD(T)221/2022/6.-** In exercise of the powers conferred by the Section 9 and Sub-section (1) of Section 10 of the Assam Town & Country Planning Act, 1959 (as amended) and (Assam Act II of 1960) read with Sub-rule (1) of Rules 3 of the Assam Town & Country Planning (Publication of Master Plan and Zoning Regulations) Rules 1962, the Governor of Assam is pleased to publish the following notice regarding the publication of the Draft Master Plan for Bokakhat.

### Notice for publication of the Draft Master Plan for Bokakhat

1. It is notified that the Draft Master Plan for Bokakhat prepared by the Directorate of Town & Country Planning, Government of Assam, Town & Country Planning Act, 1959 (as amended) read with Sub-section 1 of Section 10 of Assam Town & Country Planning Act, 1959 (as amended) for the area described in the schedule below is hereby published.
2. Any person or persons affected by the Draft Master Plan may submit their objections or opinions in writing to the Director, Town & Country Planning, Government of Assam, Dispur, Guwahati-6 within two months from the date of publication.
3. The Draft Master Plan for Bokakhat with all relevant papers and maps may be inspected free of cost during the office hours at the Office of Director, Town & Country Planning, Dispur, Guwahati-6, the Deputy Director, Town & Country Planning, Dist. Office – Golaghat, the Circle Office, Bokakhat Revenue Circle, Bokakhat, Office of the Chairman, Bokakhat Municipal Board, Bokakhat. Copies of the Draft Master Plan for Bokakhat are available at the office of the Deputy Director, Town & Country Planning, Dist. Office – Golaghat for sale on payment.

## **SCHEDULE**

### **1) Situation and Area**

District:	Golaghat
Sub-Division:	Bokakhat
Area covered by Master Plan:	31.43 sq.kms
Bokakhat Municipal Area:	5.9031 sq.kms

### **2) Revenue Villages included in the Draft Master Plan for Bokakhat**

Sl. No.	Revenue Villages	Mouza
1	Kalakhowa	Bokakhat
2	Balijan	
3	Karaiati	
4	Da-Gaon	
5	Jogigaon	
6	Ikorajan Bagicha	
7	Garahmurh	
8	Ghogara Pathar	
9	Lokhojan Gaon	
10	Ikorajan grant	
11	Mohmaiki	

### **3) Description of Bokakhat Master Plan Boundaries**

East: Rajabari, Lakhowajan Bagicha  
 North: Kandhuli mari, Ahom Gaon  
 West: Diffloo Tea Estate, Bongali Gaon  
 South: Diffloo Grant, Naharjan Tea Estate

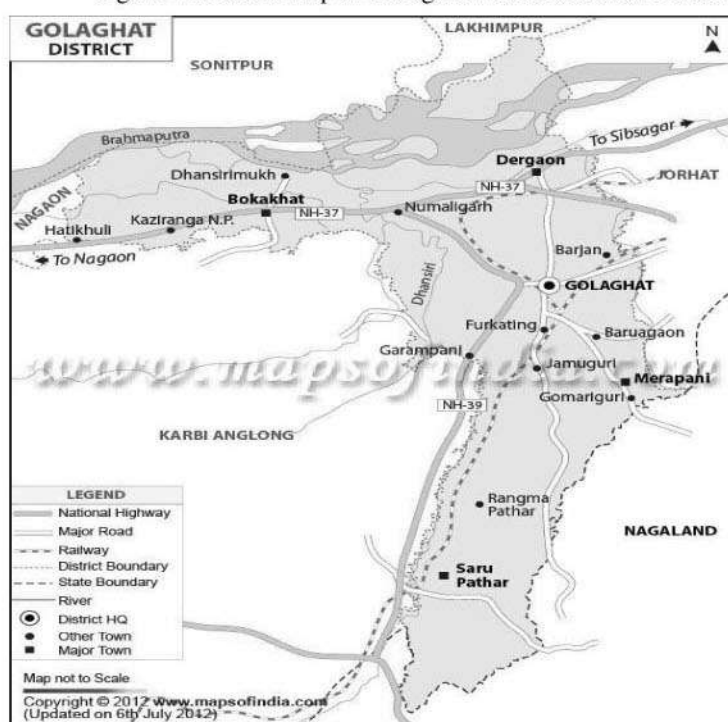
**KAVITHA PADMANABHAN,**  
 Commissioner & Secretary to the Government of Assam,  
 Department of Housing and Urban Affairs,  
 Dispur, Guwahati-6.

# Chapter 1: Introduction to Bokakhat

## 1.1. Bokakhat town: Brief introduction

Bokakhat town falls in the Golaghat district of Central Assam, set-up along the National Highway 37 (NH-37). The district is bounded by state of Nagaland to the south and east, to the north-east by river Brahmaputra and to the west by the districts of Jorhat and Karbi Anglong. Golaghat district has five notified towns, which includes Golaghat, Dergaon, Bokakhat, Sarupathar and Bokakhat. Amongst them Bokakhat is the third largest town after Dergaon. On the map, Bokakhat is located at  $26.63^{\circ}$  North latitude and  $93.6^{\circ}$  East longitude, placing it almost near the centre of the state of Assam. It is at a distance of 50 kms away from Golaghat town and 250 kms away from Dispur, the capital of Assam. Bokakhat is marked by the presence of Kaziranga National park, part of which falls within the Bokakhat sub-division and thereby impacts the local economy and livelihood activities of Bokakhat through the forest regulations and tourism activities.

Figure 1: District Map of Golaghat with location of Bokakhat



Source: Open Source at Maps of India.com

Bokakhat's natural landscape, its vibrant flora and fauna is characterized by the hill tracts and forests of Karbi Anglong, grasslands of Kaziranga and the numerous tea-estates. The NH-37

which passes through the town separates it into two unequal halves. Towards the northern half, the Brahmaputra river and its tributaries Dhansirimukh and Diffloobring about a typical landscape of riverine floodplain impacted heavily by the annual floods. The out flow from Karbi Anglong hills add to the flood issues in Bokakhat. The flooding of Kaziranga is captured in the news every year, as it is fatal for the animals living in the forest. The floods also wash away parts of the National Highway and strand highway travellers, requiring government interventions. Thus the northern part of Bokakhat town has very fragmented development of settlements in comparison to the southern side of the highway, which has densified and spread out over the decades along the foothills of Karbi Anglong hills.

Figure 2: Physical setting of Bokakhat Town between River Brahmaputra and Karbi Anglong hills and Kaziranga National Park.



Source: Google map

## 1.2. Regional relevance

The Bokakhat town is placed on the riverine flood plain of Brahmaputra, at the foothills of the Karbi Anglong hills and its development and economic activities are overshadowed by the Kaziranga National Park and Tiger Reserve as well as Elephant Reserve. Kaziranga is a designated UNESCO World Heritage site. The Park covers nearly 25,000 sq.kms of the Kaziranga-Karbi Anglong landscape with expansive grasslands, swamps and open jungle. It is inhabited by more than 2000 rhinoceros, 100 tigers and 1100 elephants, amongst other wildlife of deers, wild buffaloes, hogs, reptiles, birds and fish. Out of total of 859.42 sq.kms of the demarcated Kaziranga National Park, about 295 sq.kms falls within Bokakhat sub-division.



Being established around the Kaziranga National Park, has brought about a clear change in the local developments of the town. Investments in tourism activities have grown exponentially in the last two decades. Nowalong with large investors and entrepreneurs, many of the local residents have also set up hotels, homestays and eateries, providing various tourist services along the highway and within the local villages to cater local experiences to the tourists visiting Kaziranga.

Figure 3: Location of Kaziranga National Park near Bokakhat Town along the Brahmaputra River and NH 37



Source: Wikimedia Commons

Bokakhat is a mid-way town for people travelling from either ends of the state, and is most popular as a stop-over for meals. Thus, Bokakhat has always been a haven of highway eateries, sweet shops and other commercial establishments. The Bokakhat Peda (milk-based sweet) is popular amongst road travellers, and is a must buy item while journeying through the town.

### 1.3. Climate and topography

Located between the alluvial plains of Brahmaputra and the , the climate ranges from warm and rainy from May to October, with average temperatures ranging between 10<sup>0</sup>C to 36<sup>0</sup>C, while it is cooler from November to April, with average temperatures ranging between 14<sup>0</sup>C to 22<sup>0</sup>C. Bokakhat experiences heavy rainfall with average rainfall of 1171mm per year, reaching its peak of 588mm in June. The town is at an average elevation of 76 meters (249 feet) from sea-level.

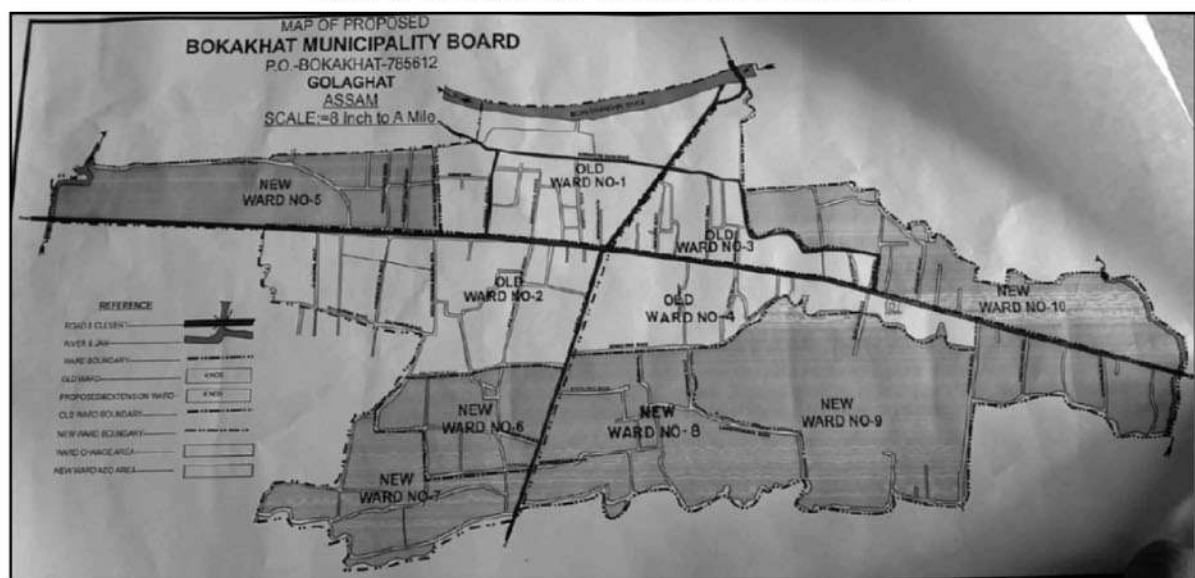
### 1.4. Urban character of Bokakhat town and its surrounding area

Administratively, Bokakhat Municipal Board falls within the Bokakhat sub-division of Golaghat. Golaghat has two civil sub-divisions, comprising of 1125 villages. There are five notified

towns, while the Census has designated two census towns in the district. Mohmaiki Census town and the nine villages in the extended Master Plan area fall within the Golaghat West Community Development Block.

The Bokakhat town has grown organically as a small commercial town exhibiting linear growth along the NH 37. The municipal boundary of the town, with four wards (Ward 1 to Ward 4) was demarcated around the intersection of the NH 37 and the Bokakhat-Dhansirimukh Road. However, in the year 2020 all the Town Committees (comprising of less than 10 wards) in Assam were changed to Municipal Boards (comprising of 10 wards or more). This means that Bokakhat increased its number of wards to 10, which has consequently, increased the municipal population to 21, 156 persons and increasing its municipal area to 5.90 sq.km. The map of the old four wards (in white) and the extended six wards (in pink) are depicted in the Bokakhat Municipal Board map below.

Figure 4: Ward-wise map of Bokakhat Municipal Town



Source: Bokakhat Municipal Board

The map above depicts the expansion of Bokakhat town from 1985 to 2022. In the mid-eighties the town was mostly marked by commercial establishments along the highway. Beyond the immediate liner settlement along the road, there were scattered villages around the national highway, engaged in agricultural activities. A study of the expansion of Bokakhat town through maps, reveal that in these ensuing 37 years, the town has mostly expanded toward the foothills of the Karbi Anglong hills, on the south of the NH-37. The scattered development on the north of the highway indicates the influence of the meandering Brahmaputra river and consequently its erosional

activities. Overall, it is seen that in the last 10-12 years, the settlement around the Bokakhat town has witnessed an increase in built-up density without physically expanding out. This indicates that Bokakhat is a growing town, with surrounding rural areas increasing in density of population which is a criterion for being recognized as urban.

Figure 5: Physical expansion of the Bokakhat town from 1985 to 2022



The settlement delineated in red, depicts the settlement pattern in 1985, while the delineation in purple depicts the shape of the urban settlement since 2006 upto 2022. The settlement has shown a marked change from a linear east-west settlement to an expanding north-south growth with the gradual development of roads in a north-south direction. As evident the town has expanded towards the south of the NH 37, while the vagaries of the Brahmaputra River and its meandering course have limited the scope of physical expansion towards the river.

### 1.5 Need for Master Plan in Bokakhat

The purpose of a master plan is to develop urban infrastructure like housing, road network, water supply, drainage, solid waste management, transportation, etc., in tandem with the growing population of the town so as to achieve healthy, congestion-free and environmentally safe cities as well as develop projects to enhance the economic activities of the town.

Providing adequate infrastructure and services, includes, -

- i) Road network covering the entire area
- ii) Well-lit streets
- iii) Drainage along the entire road network
- iv) Safe guarding environmentally sensitive areas
- v) Reviving public spaces, parks and green spaces
- vi) Permitting only well-ventilated, well-lit and serviced housing units for all city-dwellers, etc.
- vii) Managing the solid waste management for the entire planning area, with scientific disposal and recycling
- viii) Sewerage and septage management, etc.

In the pursuit of achieving such goals, the Master Plan becomes the statutory document which defines the manner in which such goals shall be achieved. The master plan report, provides the as is situation in the delineated area, and helps in planning for the goals to be achieved.

Bokakhat is not just an organically growing town of Assam, it is also critical to the area it is established in. Kaziranga National Park and Bokakhat town are slowly growing towards each other. It is essential to note that the development of an urban area and a national park are based on opposing principals – the national park world famous for the rhino, elephant and tiger sanctuary require minimum human interaction, and definitely not the city development kind. On the other hand, Bokakhat being on a very flood-prone Brahmaputra bank is growing in a haphazard manner on the south of the river, and moving more and more towards the Karbi Anglong hills, which again form part of a very eco-sensitive zone and tribal belt area.

Thus, the Bokakhat Master Plan shall provide the base on which the planning for the future of the city can be based. The control on the growth of the city built-up and resource use shall be beneficial not just for the city dwellers, but the flora and fauna surrounding the city.

## **1.6. Proposed Bokakhat Master Plan area**

The Bokakhat town has grown from an area of less than 3 sq.kms in 1999 with 4 wards to currently 5.90 sq.km with 10 wards. The town already expanding along the developing north-south

roads have now been brought into the larger master plan area. The proposed Bokakhat Master Plan area includes,-

Table 1: Area of Bokakhat Master Plan Area

Sl.No.	Area	Area (Sq.Km)	Population
1	Kalakhowa	2.86	3319
2	Balijan	1.37	3949
3	Karaiati	0.92	650
4	Da-Gaon	1.59	1720
5	Jogigaon	3.42	1316
6	Ikorajan Bagicha	2.88	2660
7	Garahmurh	5.23	1984
8	Ghogara Pathar	0.71	855
9	Lokhojan Gaon	0.37	209
10	Ikorajan grant	1.26	752
11	Mohmaiki Census Town	4.92	5639
<b>Total</b>		<b>25.53</b>	<b>23053</b>



## Chapter 2: Demographic Characteristics and Population Projection

### 2.1. Urbanization in Bokakhat Master Plan Area: Population growth

Bokakhat is an upcoming small town in the Upper Assam district of Golaghat. As evident from the decadal growth rate (DGR) of population, the Bokakhat town is growing at a low rate of 1.46 per cent every decade, in comparison to the DGR of the state of Assam at 1.7 per cent between 2001 and 2011. However, within the same period its DGR is higher than Golaghat district which is growing at 1.27 percent. As a town, Bokakhat is showing quick growth along the National Highway 37 and Bokakhat-Dhansirimukh Road, and especially with the growing tourist activities around Kaziranga National Park.

Table 2: Total Population, 1991 -2021 and Decadal Growth Rate, 2001-2011

Area	1991	2001	2011	Decadal Growth Rate (%)
Assam	2,24,14,322	2,66,55,528	3,12,05,576	1.70
Golaghat	8,28,096	9,46,279	10,66,888	1.27
Bokakhat Municipal Town	6,996	8,844	10,143	1.46

Source: District Census Handbook, Golaghat, Census 2011

As per the Census 2011, the population of the town is 10,143 with 5,178 male population and 4,965 female population. The additional Master plan area has added a population of 22,301 persons, taking up the total population of the Bokakhat MasterPlan Area to 32,444 persons. While the town area has 2,257 households, the larger planning area takes up the total households to 7,082 by adding 4,825 households.

Table 3: Gender-wise Population break-up in Bokakhat Master Plan Area, 2011

Area	Male	Female	Total Population	Households (HHs)
Bokakhat Municipal area	5,178	4,965	10,143	2,257
Additional Master Plan area	11,326	10,975	22,301	4,825
Total Bokakhat Master Plan Area	16,504	15,940	32,444	7,082

Source: District Census Handbook, Golaghat, Census 2011

The ward-wise break-up of the population in the town of Bokakhat as recorded in the Census of 2011, is provided in the table below. Bokakhat has increased the number of wards from 4 wards to 10 wards only in 2020. Thus the ward-wise population is available for 4 wards in the Census of 2011. The Ward 1 has the maximum population of 3,654 persons with 796 households.

Table 4: Ward-wise Population of Bokakhat Town, 2011

Sl.No.	Ward	No. of Households	Population
1	Ward 1	796	3564
2	Ward 2	495	2346
3	Ward 3	557	2557
4	Ward 4	409	1676
Total for Bokakhat Municipal Town		2,257	10,143

Source: Census District Handbook of Golaghat, Census 2011

The population recorded in the surrounding villages which have been included in the Bokakhat Master Plan has added a considerable increase to the total population of Bokakhat Master Plan Area. Mohmaiki is a census town with 5,639 persons, while two other villages, Balijan and Kalakhowa have added more than 7,000 persons to the total population of Bokakhat Master Plan Area.

Table 5: Village-wise population for the extended Bokakhat Master Plan Area, 2011

Sl.No.	Villages	Households (HHs)	Population
1	Mohmaiki	1,292	5,639
2	Balijan	795	3,949
3	Kalakhowa	708	3,319
4	Karaiati	138	650
5	Da-Gaon	395	1,720
6	Jogigaon	277	1,316
7	Ikorajan Bagicha	569	2,660
8	Garahmurh	412	1,984
9	Ghogara Pathar	187	855
10	Lokhojan Gaon	52	209
11	Ikorajan Grant	152	752
TOTAL		4,977	23,053

Source: Census District Handbook of Golaghat, Census 2011

## 2.2. Urban Population Decadal Growth Rate

The urban population recorded for Bokakhat Town in 2001 Census was 8,844 persons, while in 2011 there are 10,143 persons in the Bokakhat town indicating a 1.46 per cent decadal growth in the city population. In comparison, both Assam urban population and Golaghat district urban population has grown at comparatively higher rates. Assam has reported an urban population growth rate of 2.78 per cent, while the district urban population has grown at 2.04 per cent. This indicates that urbanization has been slow in Bokakhat town and it has been the recent boost in eco-tourism and ethnic tourism that economic opportunities have mushroomed for more people in the town.

Table 6: Comparison of Decadal Growth Rate of Bokakhat Urban Population with the state and district

Comparison	2001	2011	Decadal growth rate (%)
Bokakhat Town	8,844	10,143	1.46
Golaghat (Urban)	81,138	97,736	2.04
Assam (Urban)	34,39,240	43,98,542	2.79

Source: District Census Handbook Golaghat, Census 2011 and Census 2001

## 2.3. Population Density

From Census 2011 data, it is found that the urban population density in Bokakhat is very high at 1691 persons/sq.km., which is much higher than the district population density at 305 persons/sq.km and state density of 398 persons/sq.km. Thus, this is indicative of the need to prepare for the urbanizing population in the town by expanding municipal infrastructure and services to serve the increasing population.

Table 7: Population Density, 2011

Area	Population Density (Persons per sq.km)
Bokakhat Town	1691
Bokakhat Master Plan area, excluding Bokakhat	919
Comparison with State and District	
Golaghat	305
Assam	398

Source: District Census Handbook Golaghat, Census 2011

Taking the newly formed municipal area for the Bokakhat Town as provided by the Bokakhat Municipal Board, the population density is found to be 1691 persons per sq.kms, while in the remaining extended area, it is 919 persons per sq.km.

The Census of India uses population density of 400 persons/sq.km as one of the criterion for recognizing a settlement as urban. Meanwhile, the Master Plan includes immediate surrounding villages and areas that are growing in population density which are likely to support the urban activities of the core town. The Bokakhat Master Plan boundary includes 10 surrounding villages and a study of their density pattern will provide an idea of the spread of urbanization around the Bokakhat town.

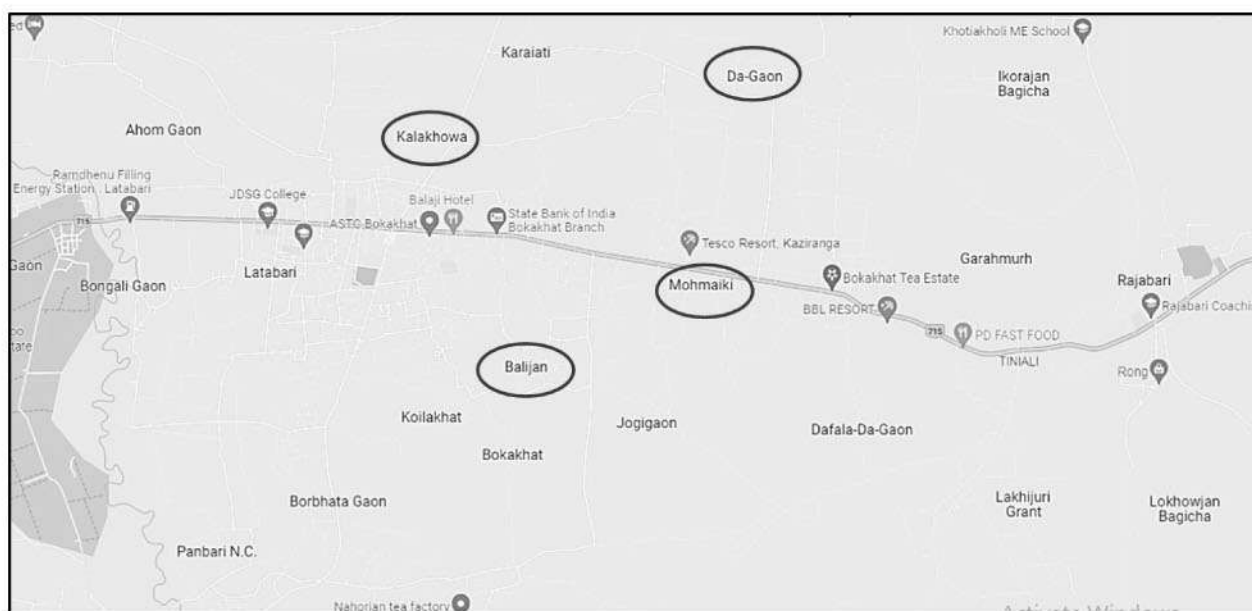
Table 8: Density in the extended Bokakhat Master Plan Area, excluding Bokakhat Town

Sl.No.	Extended Master Plan Area	Area	Population	Density (persons/sq.km)
1	Balijan	1.37	3949	2883
2	Ghogara Pathar	0.71	855	1208
3	Kalakhowa	2.86	3319	1160
4	Mohmaiki	4.92	5639	1146
5	Da-Gaon	1.59	1720	1084
6	Ikorajan Bagicha	2.88	2660	922
7	Karaiati	0.92	650	708
8	Lokhojan Gaon	0.37	209	564
9	Jogigaon	3.42	1316	385
10	Garahmurh	5.23	1984	379
11	Ikorajan Grant	1.26	752	597

Source: Calculated values from Golaghat District Handbook, Census 2011

The extended master plan area of Bokakhat exhibit high density areas. As evident from the table above, Balijan, Ghogara Pathar, Kalakhowa, Da- Gaon and Mohmaiki exhibit 4-figure densities. Balijan has the highest population density of 2883 persons/sq.km while the remaining four area report more than 1000 persons/sq.km each. From the map in the Figure 6 below, it is clear that the areas with the highest density are also the areas which are developing along the NH 37. This indicates that exponentialurbanisation along the national highway is imminent and proper planning for the urban built-up is essential through master plan zones and building rules and regulations.

Figure 6: Location of high density villages around Bokakhat Town



## 2.4. Sex-Ratio, Literacy and SC/ST population

The demographic status of Bokakhat is analysed here in comparison to the national, state and district figures. Assam has a sex-ratio of 958 women, while Golaghat district has an average of 964 women per 1000 males. Bokakhat's status is poorer in comparison with 944 women per 1000 males. However, in comparison to the national average, Assam's status is higher at the state, district and Bokakhat town level, as India's average sex-ratio is 940 women per 1000 males. The Table 10 depicts the changing sex-ratio of Bokakhat town over the last 3 decades. It reveals a positive growth of women in the town population from 822 women per 1000 men in 1991 to 959 women in 2011 Census.

Likewise in literacy rate, the Boakhat town and Extended Planning area have better performance than national rate of 74.4 and state literacy rate of 72.19. Bokakhat town has a literacy rate of 82 per cent, while the extended area has a rate of 71 per cent.

In terms of SC and ST population to total population, the trend in Assam is to have higher Schedule Tribe population, due to presence of larger number of both hill and plains tribe communities in the state. This trend of higher ST population than SC population is seen in Golaghat district demography as well.



However, within the Bokakhat town area, the presence of SC persons is greater at 12 per cent while the ST population stands at 8 per cent. In the extended Master Plan area excluding Bokakhat town, 11 per cent ST population, while 3 per cent SC population is reported. Kachari, Garo, Dimasa, Chakma are some of the major tribes present in the surrounding villages.

Table 9: Sex-Ratio, Literacy Rate and SC/ST population: Comparison

Area	Sex-ratio	Literacy Rate	% of SC Population	% of ST Population
Bokakhat Town	959	82	12	8
Extended area, other than Municipal area	969	71	3	11
Golaghat	964	92	5.8	10.5
Assam	958	72	7.0	12.0
India	940	74	16.6	8.6

Source: District Census Handbook Golaghat, 2011

Table 10: Sex-Ratio of Bokakhat Town over the Census years 1991-2011

	1991	2001	2011
Bokakhat	822	864	959

Source: District Census Handbook Golaghat, 2011

## 2.5. Population Projection

Population is the most important factor which is directly related to the various needs of the area. The prime objective of any Master Plan is to assess the present situation and project the future population for plan period, and accordingly calculate the requirements of both physical and social infrastructure in order to cater to the needs of such population. Therefore, population projection is the basic requirement for the projection of other needs of the area. From all these projections the developmental plan of an area should be prepared which can fulfill the different needs of the people living therein.

To arrive at a conclusive projection figure, three methods of population projections have been used for the city as well as the whole Master Plan Area. The methods used for projecting population are:

Table 11: Population projection for Bokakhat using various methods

Year	Arithmetic Progression Method	Geometric Progression Method	Incremental Increase Method
1991	6,996		
2001	8,844		
2011	32,444		
2021	45,168	59,683	66,920
2031	57,892	2,01,969	1,23,148
2041	70,616	12,57,287	2,01,128

*Source: Calculated values*

Considering the three types of population projection methods, the most conservative figures have been arrived at vide the Arithmetic Progression Method, showing a population of 70,616 by 2041. Since the Bokakhat town is still one of the smaller towns of Assam, with no major economic and commercial activities in the anvil, the conservative projection figure of 70,616 persons shall be considered for the purpose of planning for the horizon population.

## Chapter 3: Economic Base and Employment Scenario

### 3.1. Economic scenario of Bokakhat

Bokakhat is largely an agricultural town, with presence of few cottage, small and medium industries. Bokakhat falls in the alluvial plains of the Brahmaputra valley and thus is historically characterized by primary activities, mainly agriculture.

Table 12: Sector-wise economic activities in Bokakhat

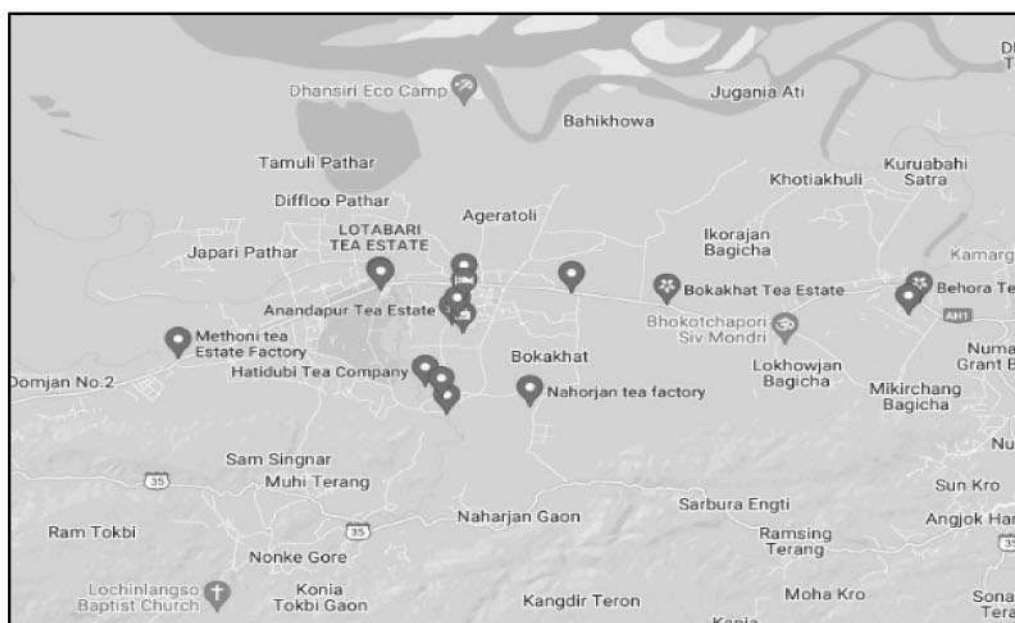
Sectors	Economic Activities	Economic activities found in Bokakhat
Primary	Agriculture, horticulture & forestry, Sericulture & fishing, mining and quarrying, animal husbandry and dairy	Paddy, rice, vegetables, tea leaves, wheat, mustard, bamboo
Secondary	Manufacturing, construction, household industries	Tea, handloom textiles, cane and bamboo products
Tertiary	Trade, tourism, hotel & restaurants, transport, storage & communication, banking, public administration and informal sector	Sub-divisional offices, commercial banks, colleges, Large and small hotels, restaurants and tourism services based around Kaziranga National Park

The old alluvial soil, rainfall conditions and terrain support the growth of tea, rice, mustard, other vegetables and bamboo. Tea is the largest agricultural industry in Bokakhat. Bokakhat tea estate, Diffloo tea estate, Nahorjan tea estate, etc., are some of the well-known tea gardens in Bokakhat. Other notable products from Bokakhat are muga/edi textiles, rice products as well as mustard oil and agaru oil. However, in the secondary sector of manufacturing activities only the tea factories having some significant production; remaining comprises of small scale household industries of edi, muga, paat textiles and other bamboo and cane products. In the tertiary sector, Golaghat has developed numerous tourism related infrastructure based in and around Kaziranga National Park like hotels, lodges, restaurants and tour operators, etc.

### 3.2. Tea-industry

The landscape of Bokakhat is marked by greenery from the forests and tea-estates. The higher elevated lands around Bokakhat grow tea gardens which act as a source of beauty and employment. In and around Bokakhat, there are numerous tea-gardens. Infact, as per the Census records 2011, tea is an important commodity manufactured in Bokakhat, other than flour and mustard oil. The tea-gardens employ many people from around the Bokakhat area. The major tea-gardens also have their own tea factories which employ a majority of the people from the surrounding areas.

Figure7: Tea-gardens in and around Bokakhat



Source: Google maps

There are more than a dozen tea-estates around Bokakhat. Some of the big and small tea gardens and estates are listed below, -

Table-13 Workers in the T.E

Sl.No.	Tea-estates and Factories	Permanent workers	Temporary workers
1	Bokakhat tea estate	1342	1773
2	Hathikuli tea estate	3468	1155
3	Nahorjan tea estate	1010	1121
4	Diffloo tea estate	861	430
5	Radhabari Tea Estate	418	200
6	Lakoojan Division Borsapori Tea Estate	370	782
7	Behora tea garden	786	3381
8	Deoparbat tea estate	NA	NA
9	Borsapori tea estate	671	657
10	Numaligarh tea estate	886	1800
11	Lakhowajan tea garden	NA	NA
12	Methoni tea factory	722	733
13	Kaziranga tea factory	NA	NA
14	Rangajan Tea Estate	NA	NA
15	Diring Tea Estate	NA	NA
16	Mikirchan TE	NA	NA
17	Borjuri Tea Estate	NA	NA
18	Siljuri TE	NA	NA
19	Anandapur TE	NA	NA
20	Latabari TE	NA	NA

Source: National Health Mission, Swasthya Sewa Dapoon

It is evident from the table above that the tea-estate are a source of employment for people living around Bokakhat Town, not so much as tea labourers, but in the tea factory and offices.

### 3.3. Tourism industry

Kaziranga National Park forms a large part of Bokakhat sub-division and in turn provides the local economy with tourism-related opportunities. According to studies, Kaziranga alone attracts 82 per cent of the visitors to national parks in Assam. On an average, annually INR 2 to 5 crores are added as revenue from the parks' activities. According to reports in March 2022, topping the last records of last 12 years, more than 2.20 lakh Indian visitors and 733 foreign visitors were reported to have visited Kaziranga. The revenue collected also crossed INR 4.5 crores as one of the highest revenue earned from the park.



The investment in the development of hotels and resorts catering to the tourist visiting the national park is a big source of employment for people living in Bokakhat. As per Bokakhat Municipal data, there are 52 hotels and restaurants in the municipal area alone. A record of the tourist properties listed with the Forest Department of Assam is an indication of the numerous employment opportunities within and around Bokakhat. Especially with the opening up of social media promoting ethnic food outlets and local experiences, homestays, local dining and village tours are mushrooming around the NH 37 and surrounding villages.

Table 13: Government and Private-owned Hotels and Resorts in Bokakhat

Govt. accommodations	Private hotels	Private Homestays
Agoratoli Eco-tourism resort	Bon Habi Resort	Anabil Home Stay
Aranya Tourist Lodge	Arimora Guest House	Bora's Home Stay
Banashree Tourist Lodge	Borgos Resort	Deutas Cottage
Bonani lodge	Bonraja Motel	Ekora Resort
Jonaki Kareng	Cottage Hrishikesh	Kaziranga Guest House
Jurpuri Ghor	Dhanshree Resort	Rhino Guest House
Kunjaban Lodge	Diphlu River Lodge	Sneha Bhawan
Oriole DRDA Guest House	Dronga G. House	
	Green Reed Resort	
	Hotel Kaziranga Continental	
	Hotel Prayag Emerald	
	Infinity Resorts	
	IORA-The Retreat	
	Kaziranga Florican Lodge	
	Kaziranga Resort	
	Landmark Woods	
	Lakasa Tourist Lodge	
	Manorama Lodge	
	Namdang House	
	Regal Guest House	
	Santi Lodge	
	Sarma Lodge	
	T.G Resort	
	Tesco Resort & Restaurant	
	United-21 Grassland Resort	
	Wild Grass Resort	

Source: Website of the Environment and Forest Department, Govt. of Assam

Bokakhat also has a small religious circuit, covering the two revered religious complexes of Sri Sri Chikon Aata Thaan and Sri Sri Kako Gosani Thaan. If developed well with local crafts and artifacts workshops and emporiums, it would provide an ideal day outing for tourists visiting Kaziranga National Park.

Figure 8: Sri Sri Chikon Aata Thaan, Bokakhat



Figure 9: Sri Sri Kako Gossani Thaan, Bokakhat



### 3.4. Manufacturing in Bokakhat

The household and other small and medium industries and service units existing in Bokakhat are listed in table below. There are presently 59 manufacturing units and 13 services units in Bokakhat town as listed with the Department of Industries and Commerce, Bokakhat.

Table 14: Small and Medium Industries and House-hold industries in Bokakhat

Sl.No.	Manufacturing Products	No. of units
1	Wooden products	59 manufacturing units
2	Steel fabricators	
3	Textiles	
4	Apparels	
5	Food products	
6	Paper & paper products	
7	Coke & refined petroleum products	
	Services	No. of units
1	Computer services	31 service units
2	Warehousing	
3	Personal services, beauty parlour	
4	Tailoring	
5	Publishing	
	Total	90 units

Source: Superintendent, Industries and Commerce, Bokakhat

The above table depicts the presence of small scale manufacturing and home-based industries prevalent in the Bokakhat town area. The services are also very small scale and home-based.

### 3.5. Work-force participation

The Bokakhat Master plan area comprises a work-force participation rate (WFPR) of 37 per cent, indicating that there is a large dependent as well as unemployed population. The extended planning area excluding municipal area shows a higher work participation rate of 38 per cent, in comparison to the Bokakhat town at 33 per cent.

Table 15: Work Participation Rate, 2011 (in %)

	Total Workers	%	Male workers	%	Female Workers	%
Bokakhat Town	3397	33	2856	84	541	16
Extended planning area excluding Municipal Area	8499	38	6235	73	2264	27
Total	11896	37	9091	76	2805	24

Source: Calculated from Census 2011 data

Taking a gendered view, it is seen that in the Bokakhat master plan area 76 per cent of the main-workers' work force comprises of men, while women comprises of only 24 per cent. In the Bokakhat town itself, the total working population comprises of 84 per cent men, while only 16 per cent of female population engaged in economically gainful pursuits. In the extended planning area, 73 per cent men have reported to be working, 21 per cent women comprise of the remaining working population. This indicates that women do not have adequate opportunities for economic engagements and are constrained to work within their homes or work without formal means of income.

Table 16: Comparison of share of working population to total population at State-District –Master Plan Area, 2001-2011

	2011	2001
Assam state	38%	36%
Golaghat district	45%	41%
Bokakhat master plan area	37%	35%

Source: District Census Handbooks for Census 2001 and 2011

A comparison with the working population of the state and district shows that, the share of working population is low across the state. Only 38 per cent of total population of Assam is working, which is similar to the status of working population in Bokakhat planning area, revealing an overall low workforce participation in the economy. However, if the figures are analysed with the Census 2001 report, it is found that the work participation rate has increased over time, indicating towards better economic opportunities and sources of revenue.

### 3.6. Types of workers

As per the Census of India, the population can be divided into main workers, marginal workers and non-workers. They can be defined as:

- a) **Main Worker:** One who has worked in any economically productive work for at least 183 days/6 months in a year.
- b) **Marginal Worker:** One who has engaged in economically productive work for less than 183 days/6 months in a year.
- c) The ones who have not participated in any economically productive activity constitutes the 'Non-Workers'.

Table 14 finds that within Bokakhat town, 93 per cent of the total workers are main workers. Bokakhat being a sub-divisional headquarter provides opportunities for government services in the various government offices, as well as the town provides a market for various businesses and commercial outlets. The remaining 7 per cent of the working population comprise of the marginal working population, which includes people who continue to work mainly as farmers in the surrounding areas of the city. In comparison, in the extended master plan area only 74 per cent working population are main workers. The 26 per cent marginal workers indicate towards higher number of people being engaged in agricultural activities for less than 6 months of the year, and remaining unemployed for the rest of the year.

However, it is distressing to note that more than 60 per cent of the population is unemployed as per Census data 2011.

Table 17: Share of Main & Marginal Workers of Bokakhat Master Plan Area, 2011

Area	Main Workers (against total workers)	Marginal Workers (against total workers)	Unemployed (against total population)
Bokakhat Town	93%	7%	67%
Extended Master Plan Area	74%	26%	62%

Source: District Census Handbook of Golaghat, Census 2011

The Census categories workers into four main types. They are, -

- a) **Cultivators:** Person engaged in cultivation of own land or otherwise, for payment in money, kind or share



- b) Agricultural labourers: Person engaged in the cultivation of another person's land as a sub-cultivator or labourer for wages. Such a person has no right of lease on the land or contract on land in which they work.
- c) Household industry worker: Such a worker is engaged in an industry which is run by one or more members of a family within the home where they live in urban areas or within the village in rural areas.
- d) Other workers: Workers who are not engaged in any of the above three kinds of work and includes government services, private job or other professionals, trade and commerce, etc. Plantation workers are included in this category as per Census.

Table 18: Share of Main workers in the Bokakhat Master Plan area, 2011

Main workers	Bokakhat Town		Extended planning area, excluding municipal area		Total Master Plan Area	
	Number	%	Number	%	Number	%
Cultivators	95	3%	892	14%	987	10%
Agricultural labourers	6	0.2%	110	2%	116	1%
Household Industry workers	32	1%	172	3%	204	2%
Others	3010	96%	5152	81%	8163	86%

*Source: Census 2011 data*

Bokakhat has numerous government offices, sizeable commercial market and many tea-estates. These areas provide the residents in this area with economic oppo from the table above, it is evident that in the Bokakhat town and its surrounding extended areas which comprise the master plan area are characterized by mostly urban workers who are primarily non-agricultural workers. 96 per cent workers in Bokakhat town fall in the 'others' category, which includes government services, private job or other professionals, trade and commerce, etc. In Only 3 per cent workers reported as cultivators. Likewise in the non-municipal area of the master plan, 81 per cent workers were in the 'others' category, while 14 per cent reported to be cultivators and 2 per cent as agricultural labourers. Overall in the total master plan area, 86 per cent were mainly workers in the 'other' category, 10 per cent reported as cultivators, 2 per cent in small household industries, while 1 per cent as agricultural labourers. This indicates the need for including these areas within the urban boundary of the master plan and address the need of the population as a growing urban area.

## Chapter 4: Housing

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### 4.1. Housing and its relevance

The Census of India defines a house as a building or part of a building having separate main entrance from the road or common courtyard or staircase, etc. used or recognized as a separate unit. The United Nation's Universal Declaration of Human Rights, 1948, recognizes the need of housing along with food, clothing, medical care, etc., as a right to a standard living required for health and well-being of everyone. Provision of housing is a social right, and the Government of India has been involved in providing housing to both rural and urban poor.

The Pradhan Mantri Awas Yojna-Urban (PMAY-U), a flagship mission of the Government of India for providing pucca housing to low and middle income groups characterizes housing as providing,

- a) All-weather housing unit with water, kitchen, electricity and toilet,
- b) Women empowerment
- c) Better quality of life for urban poor
- d) Security of tenure
- e) Adequate physical and social infrastructure.

The Government of India considers houses constructed with permanent materials to be a complete house. Thus through its various programmes it has promoted the use of permanent materials like burnt bricks, concrete, stone slabs, etc., for the completion of walls, floors and roofs. However in Assam, the earthquake hazard has led to the evolution of the Assam-type house which uses non-permanent materials on the walls, GI sheets for roof and concrete or mud floors, which have withstood the onslaught of the heavy rains of Assam. Such houses are also easier to reconstruct if damaged during Assam's annual floods.

## 4.2. Types of House structure

The Census enumerates houses on their sub-classification of 5 categories: permanent, semi-permanent, serviceable, non-serviceable and unclassifiable. The Census definition of the structures are as follows, -

- a) **Permanent:** Houses with wall and roof made of permanent materials. Wall can be made of G.I., Stone packed with Mortar, Stone not packed with Mortar, Metal, Asbestos sheets, Burnt bricks, Stone or Concrete. Roof can be made of Hand-made tiles, Machine made tiles, Slate, G.I., Metal, Asbestos sheets, Brick, Stone or Concrete.
- b) **Semi-Permanent:** Either wall or roof is made of permanent material while the other is made of temporary material.
- c) **Temporary:** Houses with wall and roof made of temporary material. Wall can be made of Grass, Thatch, Bamboo etc., Plastic, Polythene, Mud, Unburnt brick or Wood. Roof can be made of Grass, Thatch, Bamboo, Wood, Mud, Plastic or Polythene.
  - **Serviceable temporary:** Wall is made of Mud, Un-burnt brick or Wood.
  - **Non-serviceable:** Wall is made of Grass, Thatch, Bamboo etc., Plastic or Polythene.
- d) **Unclassifiable :** Houses not classifiable under any of the above category.

In Bokakhat, like the rest of Assam, there are 3 types of houses -

- a) **Kutch House (Temporary):** A house having mud floor, bamboo wall plastered with mud and thatch roof.
- b) **Assam Type (Semi pucca/Semi permanent):** A house having brick wall, cement concrete or mud flooring, CGI/AC sheet roofing. Assam type houses may have any one or more of the house component (wall, roof, floor) in non-permanent material and are thus considered semi-pucca units.
- c) **Pucca House or Permanent House:** A house having cement concrete flooring, brick wall and RCC slab roofing.

Table 19: Housing condition in Bokakhat Master Plan Area, 2011(% of households)

Housing Condition		Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the municipal Area	Total Bokakhat Total Master Plan Area
Permanent		57.8%	38.5%	44.6%
Semi-Permanent		38.5%	56.1%	50.5%
Temporary	Serviceable	0.2%	0.4%	0.4%
	Non-serviceable	3.2%	4.7%	4.2%
Unclassifiable		0.3%	0.26%	0.27%

Source: District Census Handbook, Census 2011

In the Bokakhat Master Plan area, nearly 57.8 per cent of housing units are permanent, while in the extended master plan area 56 per cent are semi-permanent houses. This clearly indicates towards the desire to construct houses using fully concrete or permanent materials in the municipal area, while in the surrounding rural areas the semi-permanent structures indicating the existence of greater number of Assam-type structures which are partly made of kutcha materials – usually mud floor. Thus overall within the Master Plan area, 50 per cent housing units are semi-permanent while 44 per cent are permanent. In the extended Master Plan area, temporary un-serviceable units claim a higher share (4.7%) than in Bokakhat town area (3.2%). Unserviceable temporary houses cannot provide healthy living environment to their inhabitants and are vulnerable to the vagaries of nature, especially floods and heavy rainfall.

Table 20: Housing Tenancy Typology in Bokakhat Master Plan Area (% of HHs)

Tenancy Status	Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the municipal Area	Total Bokakhat Master Plan Area
Owned	61%	78%	73%
Rented	31%	12%	18%
Any others	7%	10%	9%

Source: District Census Handbook, Census of India 2011

Majority of housing units in the total Bokakhat Master Plan area are owned. Its found that 73 per cent units are owned, against 18 per cent rented. Again, the trend of renting is higher in the Bokahat town with 31 per cent units rented, against only 12 per cent in the extended master plan area excluding the Bokakhat town. Rented accommodation is particularly noticeable in Bokakhat Municipal Area due to the presence of migrant workers and students from peripheral villages, as well as incremental migrant families from rural to more urbanized areas. The rise in rental housing indicated towards rising urbanization, as people shift to the urbanizing areas in search of job, for higher education and other opportunities. Overall in the total planning area, 9 per cent people live in

other type of housing which usually means that there is existence of hostels and guest-houses, some amount of employer housing or the practice of living in relatives' homes.

### 4.3. Condition of Dwelling units

Housing condition indicates the physical state of the house or dwelling unit. Census has classified dwelling units into good, livable, and dilapidated. They can be defined in the following manner-

- a) Those houses which do not require any repairs and are in good condition may be considered as '*Good*'.
- b) Those houses which require minor repairs may be considered as '*Livable*'.
- c) Those houses which are showing signs of decay or those breaking down and require major repairs or those houses decayed or ruined and are far from being in conditions that can be restored or repaired may be considered as '*Dilapidated*'.

The percentage distribution of households based on different housing condition in Bokakhat can be understood from the following table:

Table 21: Structural condition of houses in Bokakhat Master Plan Area, 2011(% of HHs)

Condition of Census houses as	Bokakhat Municipal Area	Bokakhat Master plan Area excluding the Municipal Area	Total Master Plan Area
Good	57%	43%	48%
Livable	37%	50%	46%
Dilapidated	6%	7%	7%

Source: District Census Handbook, Census of India 2011

The table above reveals that 48 per cent households in Bokakhat Master Plan Area live in 'good' houses, while another 46 per cent live in 'livable' houses. Since livable houses means houses that require only minor repairs, while good houses require no repairs, it indicates that majority of the houses are structurally stable. In the total master plan area of Bokakhat only 7 per cent houses are dilapidated. Such houses require intervention through the various housing supply schemes of the government which may be looked into through planning by the Bokakhat Municipal Board and the various Panchayats, who are responsible for implementation of government funded schemes.

#### 4.4. Housing Construction material: Roof, Wall and Floor

The condition of housing can be analysed through the study of the materials used in the construction of the roof, floor and walls. These three components help in understanding the viability of the house as an all-weather house. This is especially important in the flood plains of Assam, where floods are an annual occurrence across various locations in the state.

Table 22: Roofing Material of Bokakhat Master Plan Area, 2011(% of HHs)

Roof Material	Bokakhat Municipal Area	Bokakhat Master Plan Area (excluding MB area)	Total Master Plan Area
Grass/Thatch/Bamboo/Wood/Mud etc.	3.5%	5.6%	4.9%
Plastic/ Polythene	0.0%	0.1%	0.1%
Handmade Tiles	0.3%	2.6%	1.8%
Machine made Tiles	0.0%	0.0%	0.0%
Burnt Brick	0.2%	0.0%	0.1%
Stone/ Slate	1.8%	0.2%	0.7%
G.I./Metal/Asbestos sheets	86.7%	89.2%	88.4%
Concrete	7.5%	2.2%	3.9%
Any other material	0.0%	0.2%	0.1%

Source: District Census Handbook, Census of India 2011

The housing census information in the table above reveals that across the Bokakhat Master Plan area, more than 88 per cent houses use G.I., metal and asbestos sheets in the construction of their roofs. This makes it clear majority homes in Bokakhat master plan area Assam-type houses. Another 4.9 per cent houses in the total area use degradable natural products like grass, thatch, bamboo, wood, mud, etc. These houses would require frequent maintenance and change in the roofing material to keep the houses safe from the heavy monsoon rains. The growing trend across the state is to construct completely concrete homes, with RCC roofs. However in Bokakhat Master plan Area it is seen that only 3.9 per cent of houses have concrete or RCC roofs. Within the Bokakhat Municipal Area the share of houses with concrete roofs are 7.5 per cent, while in the extended master plan area which comprises of rural areas, the share of concrete roof houses is only 2.2 of its total houses. This indicates that the more urban areas are shifting towards completely concrete roofs from the usual GI sheets used in Assam type homes.

Table 23: Wall Material used in the Bokakhat Master Plan Area, 2011(% of HHs)

Wall Material	Bokakhat Municipal Area	Bokakhat Master Plan Area (excluding MB area)	Total Master Plan Area
Grass/ Thatch/ Bamboo etc.	33.8%	51.9%	46.2%
Plastic/ Polythene	0.3%	0.5%	0.4%
Mud/ Unburnt brick	7.3%	8.4%	8.0%
Wood	0.6%	0.1%	0.3%
Stone not packed with mortar	1.6%	0.4%	0.8%
Stone packed with mortar	2.0%	0.5%	1.0%
G.I./ Metal/ Asbestos sheets	0.4%	0.1%	0.2%
Burnt brick	53.1%	37.6%	42.6%
Concrete	0.7%	0.4%	0.5%
Any other material	0.2%	0.1%	0.1%

Source: District Census Handbook, Census of India 2011

Continuing the trend of Assam-type homes in Bokakhat, it is seen that 46 per cent houses use biodegradable materials like bamboo, thatch, etc., to construct the walls. 33 per cent houses in the Bokakhat Municipal area comprise of such houses while 51.9 per cent houses in the extended municipal area in the surrounding rural hinterlands have degradable wall materials. In the total master plan area, 42 per cent houses use burnt bricks, a permanent material for constructing walls. The share of such houses in the municipal area is 53 per cent, while in the extended master plan area this share is 37 per cent. Mud and un-burnt bricks for walls is used by a considerable 8 per cent houses in the total master plan area. It is noticeable that less than 1 per cent houses use concrete walls, in the entire planning area. Even in the Municipal area the share is similarly low.



Table 24: Floor material used in Bokakhat Master Plan Area, 2011(% of HHs)

Floor Material	Bokakhat Municipal Area	Bokakhat Master Plan Area (excluding MB area)	Total Master Plan Area
Mud	37.7%	66.7%	57.5%
Wood/ Bamboo	0.4%	1.0%	0.8%
Burnt Brick	1.1%	2.2%	1.8%
Stone	0.1%	0.3%	0.2%
Cement	57.1%	28.8%	37.8%
Mosaic/ Floor tiles	3.4%	1.0%	1.8%
Any other material	0.2%	0.1%	0.1%

Source: District Census Handbook, Census of India 2011

The table above analyses the floor material used in the Bokakhat Master Plan Area and it shows that 57.5 per cent households have reported using mud as the dominant material. This share in the Municipal area alone is only 37.7 per cent, while in the extended rural hinterlands, the share is a high 66.7 per cent. Other significant material used for floor construction is cement, of which the share in municipal area is 57 per cent, while in the extended area is 28.8 per cent. In the Municipal Area, a considerable 3.4 per cent houses are using floor tiles and mosaic in their floors, but in the rest of the master plan area this share is still a lower 1 per cent.

#### 4.5. Availability of Kitchen, Toilet, Bathroom

A good quality housing unit must be served by a cooking space, a toilet and a bathing area separate from the living/sleeping area. This ensure healthy, smokeless and clean cooking environment, with dignified, private and safe living conditions.

##### 4.5.1. Kitchen

The Census enumerates kitchens in the following manner, -

- a) Cooking inside the House:
  - (i) Having a kitchen: In a separate room
  - (ii) Not having a kitchen as a separate space in the house
- b) Cooking outside the house:
  - (i) Having a kitchen as a separate room outside the house
  - (ii) Not having a separate room, rather in an open space

Table 25: Availability of household kitchen in Bokakhat Master Plan Area(% of HHs)

Kitchen Facility	Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the Municipal Area	Total Bokakhat Master Plan Area
Cooking inside the house	99%	92%	94%
Cooking outside the house	1%	8%	6%
No cooking	0.4%	0.3%	0.3%

Source: District Census Handbook, Census of India 2011

The table above depicts the availability of kitchen across households in the Bokakhat Master Plan Area. Almost 94 per cent households in the Bokakhat Master Plan Area have reported the availability of separate kitchen inside the house. The share is 99 per cent in the municipal area and 92 per cent in the extended planning area. Meanwhile, about 6 per cent households have reported cooking outside the house, in a separate kitchen. Households in the Bokakhat master plan area have healthy cooking environment.

#### 4.5.2. Availability of Toilet

Availability of proper latrine with piped sewer system or septic tank is a must for households to lead a dignified life. The lack of proper access to latrine leads to a plethora of problems. Open defecation and outdated latrines like Pit Latrine and Service Latrine creates an unhealthy environment by attracting flies and contaminating land and water sources. It is known to spread fatal vector-borne diseases especially among children. It also creates discomfort and raises security issues among adolescent girls and women.

Table 26: Availability of Toilet Facility in the Household, Bokakhat Master Plan Area, 2011(% of HHs)

Latrine Facility	Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the Municipal Area	Total Bokakhat Master Plan Area
Number of households having latrine facility within the premises	97.9%	72.5%	79.9%
Number of households not having latrine facility within the premises	1.0%	13.7%	10.0%
Public Latrine	0.7%	0.5%	0.6%
Open defecation	0.4%	13.3%	9.5%

Source: District Census Handbook, Census of India 2011

The table depicts the percentage distribution of the availability of latrine facilities across households in Bokakhat master plan area. The availability of toilet within the premises is reported by 79.9 per cent households within the total master plan area. In Bokakhat town, 97.9 per cent have toilets within the house premise, while this figure in the extended area is 72.5 per cent houses. 13.7 per cent households report having toilets outside the house in the extended rural areas of the master plan boundary, while in the municipal town only 1 per cent have toilets outside the house. However, the distressing practice of open defecation is reported by 9.5 per cent households in the total master plan area. Although in the municipal town the figure is 0.4 per cent, in the extended rural areas more than 13 per cent households report defecating in the open.

Table 27: Type of Latrines used in the Bokakhat Master Plan Area, 2011(% of HHs)

Latrine Facility		Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the Municipal Area	Total Bokakhat Master Plan Area
Flush/pour flush latrine	Piped sewer system	11.3%	4.7%	7.0%
	Septic tank	63.2%	38.0%	47.0%
	Other system	8.8%	8.7%	8.8%
Pit latrine	With slab/ventilated improved pit	8.0%	8.4%	8.3%
	Without slab/open slab	4.7%	39.6%	27.2%
Night soil disposed into open drain		0.05%	0.1%	0.4%
Service latrine	Night soil removed by human	0.0%	0.0%	0.0%
	Night soil serviced by animal	3.8%	0.1%	1.4%

Source: District Census Handbook, Census of India 2011

An in-depth analysis of the available toilet facilities depicts that the majority of households that is 47 per cent households in the total Master Plan area have reported the use of septic tanks. The share in the municipal town is more than 63 per cent while in the extended planning areas 38 per cent households have pit latrines. The outdated Pit Latrine system without improved systems of

ventilation or covered slabs is used by 39 per cent of household in the extended rural areas within the master plan boundary, while this share is about 5 per cent in the municipal area. In total about 62 per cent households in the total master plan area have the more advanced flush/pour flush latrine, and this figure is and this figure is 83 per cent in the municipal area. The distressing practice of disposing the night soil into open drains and pits has been reported by less than 1 per cent households in the planning area, yet it is necessary to address this matter and take the number to zero.

Although the 2011 Census data provides a concerning scenario of sanitation in the Bokakhat Master Plan area, the launch of Swachh Bharat Mission on 2<sup>nd</sup> October 2014 have addressed the problem somewhat. Individual Household Latrines (IHHLs), as well as Community/Public toilets(CT/PT) have been constructed in the Bokakhat Municipal Town. The scheme has provided toilets in 323 households, while also constructing 6 Community toilets in the municipal area. Infact, the Swachh Bharat Mission has with their efforts also declared Bokakhat to be an Open Defecation Free city.

Table 28: Construction of Toilets under Swachh Bharat Mission at Bokakhat Municipal Town

Toilet type	Target	Completed
Individual Household Latrines	323 seats	323 seats
Community/Public toilets	6 seats	6 seats

Source: Bokakhat Municipal Board, 2022

#### 4.5.3. Availability of Bathrooms

Table 29: Availability of Household Bathrooms in Bokakhat Master Plan Area, 2011(% of HHs)

Bathroom Facility		Bokakhat Municipal Area	Bokakhat Master Plan Area excluding the Municipal Area	Total Bokakhat Master Plan Area
Availability of bathroom	Bathroom	83%	46%	58%
	Enclosure without roof	14%	26%	22%
No Bathroom		32%	3%	28%

Source: District Census Handbook, Census of India 2011

From the table above, it is clear that 58 per cent of the households under Bokakhat Master Plan Area have access to bathrooms. For around 22 per cent this means having a bathroom without roof for bathing. However, it is concerning that 28 per cent households have no bathroom. Within the Municipal town area, 32 per cent households and in the extended planning area, 3 per cent

households do not have any bathroom at all. This is a major barrier in the way of living a dignified life, and reflects how the area is lagging behind in basis infrastructure.

#### 4.6. Adequacy of housing for families: Congestion issues

Addressing the issue of congestion is very essential in understanding the adequacy of housing and estimating the shortage of housing in a planning area. It is desirable that a married couple should have one separate room to themselves and their small children.

The table below shows that most of the households in Bokakhat Master Plan area have one married couple. However, the area to be addressed is for the households with more than one married couple, who shall require a separate house, either owned or rented if the current house they live in has one Bedroom-Hall-Kitchen set-up. Two married couples are usually seen in Indian households, when married son and parents live together. Yet there are 178 households in Bokakhat Master Plan Area with more than two-married couple in the household.

Table 30: Percentage of Households with the number of Married Couples, Bokakhat Master Plan Area, 2011  
(% of HHs)

No. of Married Couples in a Household	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area	
			% of Households	No. of Households
None	14.2%	12.0%	12.7%	900
1	72.9%	73.5%	73.3%	5193
2	9.9%	12.2%	11.5%	813
3	2.4%	2.0%	2.1%	151
4	0.5%	0.2%	0.3%	23
5+	0.1%	0.0%	0.1%	4

Source: District Census Handbook, Census of India 2011

Again the table below shows that most of the households in Bokakhat Master Plan area have two (27.1% HHs) to three (28.8% HHs) rooms per household. However, the area to be addressed is for the households with one room or no exclusive rooms. In Bokakhat Master Plan Area 33 households have no exclusive rooms in the house. Such households are mostly likely to look for alternate housing as the family grows.

Table 31: Number of Rooms available in a House per Household, Bokakhat Master Plan Area, 2011

No. of rooms	Bokakhat Municipal Area (% of HHs)	Master Plan Area (excluding MB area) (% of HHs)	Total Master Plan Area	
			% of HHs	No. of Households
No exclusive room	0.0%	0.7%	0.4%	33
One room	9.1%	7.2%	7.8%	553
Two rooms	25.0%	28.0%	27.1%	1916
Three rooms	26.5%	29.8%	28.8%	2037
Four rooms	19.5%	15.8%	17.0%	1204
Five rooms	11.3%	9.4%	10.0%	707
Six rooms and above	8.5%	9.1%	8.9%	633
Total	100%	100%	100%	7082

Source: District Census Handbook, Census of India 2011

Again the table below shows that in the Bokakhat Master Plan Area, majority of households in Bokakhat Master plan area have 4 to 6/8 members in the household. There are 232 households which are single member households, meaning these are most likely migrant workers, who living alone within the Bokakhat planning area for work or studies. The area to address maybe the 1757 households with more than 6 to 8 members up-to 9 plus members, who would be likely to look for alternate housing for additional married couples in the family.

Table 32: Number of family members per Household, Bokakhat Master Plan Area, 2011(No. of HHs)

No. of family members	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area
1	111	122	232
2	210	325	535
3	427	781	1208
4	632	1317	1949
5	384	1016	1400
6-8	384	1076	1459
9+	111	188	298

Source: District Census Handbook, Census of India 2011

## 4.7. Housing Shortage in Bokakhat Master Plan Area

### 4.7.1. Household size

The number of family members per household divided by the total population gives the household size of the planning area. In the case of Bokakhat, the average family size is 4.58 persons. The following table shows the number of person per household in Bokakhat Master Plan area.

Table 33: Household Size in Bokakhat Master Plan Area, 2011

Year	Number of Households	Total Population (in numbers)	Number of Persons per Household
2011	7082	32444	4.58

Source: District Census Handbook, Census of India 2011

### 4.7.2. Housing Shortage

Urban housing shortage calculations were undertaken by the Technical Group on Urban Housing Shortage (TG-12) under the Ministry of Housing and Urban Poverty Alleviation, headed by Prof. Amitabh Kundu in 2011. The methodology for calculating the housing shortage as proposed by this technical group has been adapted for calculating the housing shortage for the Master Plan Area of Bokakhat. The data required as per the technical group on Housing Shortage is as follows:

Sl.No.	Congestion Parameters as per Technical group on Urban Housing Shortage*	Data used for the purpose of this report
1	Households living in non-serviceable kutcha houses	- Houses with predominantly katcha or semi pucca roof material /Wall material - Temporary housing, taking both Temporary houses and unclassifiable houses data
2	Households living in Obsolescent houses	- Dwelling units which are reported as 'dilapidated'
3	Households living in Congested houses, requiring new houses	- Substituted with data of HHs without exclusive room
4	Households in homeless conditions	- No Houseless population is reported in Bokakhat Master Plan Area in Census 2011

\* Source: Report of the Technical Group on Urban Housing Shortage (TG-12), 2012, pg.4



As all the data as stipulated by the technical group is not available for the master plan area in the Census, relevant data is substituted to calculate the housing shortage.

Table 34: Factors for calculating Housing Shortage of Bokakhat Master Plan Area, 2011

Sl. No.	Factors	Description	Remarks
1	Obsolescence factor	Dwelling units aged 80 years or more are treated as obsolete. Number of households living in the dwelling units having age 40-80 years and in bad condition and percentage of households living in all structures aged 80+ years, irrespective of condition of structure, taken together as obsolescence factor and considered as housing requirement.	471 HHs (Data of Dwelling units which are reported as 'dilapidated' has been considered for obsolescence factor)
2	Temporary housing	All temporary houses should be considered as housing requirements as per recommendations.  According to census data both Temporary houses and unclassifiable houses should be taken into consideration to arrive at the total number of temporary housing	329 HHs
3	Houses with predominantly katcha or semi pucca roof material /Wall material	Houses with Katcha roof / wall, i.e., using grass/thatch/mud/bamboo/wood or Plastic/polythene/hand-made tiles for roof and these same material for walls are considered as Kutch house	352 HHs (Houses with kutcha roof require regular maintenance, unlike a house with kutcha wall but pucca roof; so Houses with kutcha roof are taken for purpose of this calculation)
4	Congestion factor	Congestion factor is defined as the percentage of households in which each married couple does not have a separate room to live.  As this data is not available in the Census or the National Sample Survey Round information for Bokakhat town, so data of HHs without exclusive town is used as the substitute)	32 HHs (As 32 HHs have reported having no exclusive room, for the purpose of calculation, they are considered for the Congestion factor)

Source: Data from District Census Handbook, Census of India 2011 Analysis by the Deputy Director, T&CP, Golaghat

From the above considerations, the total housing shortage for Bokakhat Town is calculated as follows:

Table 35: Computation of current housing shortage, 2011

Parameter	No. of Housing Units
1. Obsolescence factor	471
2. Temporary housing	329
3. Houses with predominantly katcha material	352
4. Congestion factor Housing Deficiency or Congestion Factor for Married Couples ( <i>Substituted by HHs with no exclusive rooms</i> )	32
Total Housing Shortage	1184
Total HHs in Bokakhat MP area ( <i>as per 2011 census</i> )	7082
Housing Shortage in percent (Housing Shortage / No. of Urban HHs)	16.72%

Source: Calculated Values

There is a shortage of 1184 housing units, taking into account the factors of obsolescence, temporary housing, units with temporary roofing materials and those units without any exclusive rooms. As a growing urban centre, Bokakhat town is on the anvil of becoming overcrowded, with congested housing without adequate sanitation facilities. In the surrounding rural areas, the housing scenario depicts of inadequate facilities like all-weather housing materials, availability of separate pucca bathroom, pucca toilets, etc. While changes are happening in the housing scenario of Bokakhat, the process has been slow.

#### 4.8. Housing Supply Mechanism

Majority of the houses in Bokakhat are self-built. However, to provide assistance for house construction and renovation, especially to the Economically Weaker Section (EWS), Low Income Group (LIG), Middle Income Group (MIG), minorities, socially backward sections of society and physically challenged, the government has put in place various affordable housing schemes over the years, like Indira Awas Yojana, Integrated Housing and Slum Development Programme, Pradhan Mantri Awas Yojna Urban and Rural, Apun Ghor Achoni, etc. These have brought about a perceptible change in the housing scenario. The various housing schemes available in Assam are, -

**a) Prime Minister Awas Yojana (Urban) {PMAY (U)}:** This scheme launched in 2015, aims to provide housing for all in the urban areas by 2022. The mission seeks to address the housing requirement of urban poor including slum dwellers through the following programme verticals:

- i) Slum rehabilitation of slum dwellers with participation of private developers using land as a resource.
- ii) Affordable housing through credit linked subsidy.
- iii) Affordable housing in partnership with public and private sector.
- iv) Subsidy for beneficiary led individual house construction/enhancement.

**b) Individuals Household Latrine (IHHL) under Swachh Bharat Mission (SBM):** IHHL under SBM aims to eliminate open defecation in the country. Here applicants can approach the local authorities in their area to get central assistance for construction of toilets. They can also complete the process online through an official portal of the central government. Conversion of old toilets can also be applied for.

**c) National Urban Livelihood Mission (NULM):** Launched in 2013, NULM aims to provide permanent shelter equipped with essential services to the urban homeless in a phased manner under the scheme of Shelter for Urban Homeless (SUH). The objectives of the Shelter for Urban Homeless (SUH) component of NULM scheme are to:

- i) Ensure availability and access of the urban homeless population to permanent shelters including the basic infrastructure facilities like water supply, sanitation, safety and security.
- ii) Cater to the needs of especially vulnerable segments of the urban homeless like the dependent children, aged, disabled, mentally ill and recovering gravely ill, by creating special sections within homeless shelters and provisioning special service linkages for them.
- iii) Provide access to various entitlements, viz. social security pensions, PDS, ICDS, identity, financial inclusion, education, affordable housing etc. for homeless populations.

iv) Formulate structures and framework of engagement for development, management and monitoring of shelters and ensuring basic services to homeless persons, by state and civil society organizations including homeless collectives.

- d) **Apun Ghar Home Loan:** The Government of Assam has initiated a housing scheme known as Apun Ghar Home Loan scheme to provide home loan for State Government employee on subsidized interest rates. Assam Government has signed a Memorandum of Understanding (MOU) with State Bank of India for the same. Under the home loan scheme, the eligible beneficiaries who are permanent residents and employee of State Government can avail a maximum loan amount of Rs.15 Lakhs without collateral security from the concerned bank. The Assam Government will provide 3.5 per cent subsidy of interest to the Government employee under this scheme. Once the application is approved, the interest of home loan will be 5 per cent for women and 5.05 per cent for men.

The housing scenario in Bokakhat Master Plan Area has witnessed a change in the recent years due to government schemes and spread of loan related financial literacy, but there still persists a gap between the demand and supply of dwelling units. The issue is somewhat pronounced in Bokakhat Municipal Area, which has seen influx of job seekers especially menial workers in search of better economic prospects. This has necessitated the development of shelters and low cost houses to prevent sprouting of slums and squatters without basic amenities.

## Chapter 5: Transportation

### 5.1. Network of roads

Bokakhat falls in Central Assam, right on the National Highway 37. Bokakhat is well connected within Golaghat and to other important areas of Assam vide a network of district roads. The entire planning area of Bokakhat falls within 5 to 10 kms. of the Assam Trunk Road or NH 37.

### 5.2. Existing PWD and Municipal Roads in the Bokakhat town

The Bokakhat Municipality has a well-established road network around the town. Nearly 71.172 kms of roads have been constructed in and around the Bokakhat town. Of this, 40.015 kms. are PWD roads, while 31.137 kms. are municipal roads.

Figure 10: Road network in Bokakhat Master Plan area



Source: Google map

The following table 37 and table 38 provide the list of roads constructed by PWD and Bokakhat Municipality in Bokakhat.

Table 36: Existing PWD Roads network in Bokakhat Master Plan area

Sl. No.	Name of the Road	Length (Km)
1	NH-37 to Kolakhowa	1.710
2	NH-37 to Agoratoli	5.340
3	NH-37 to Koilakhat via Anandapur	2.200
4	CNB College Road	0.400
5	Hospital Road	0.455
6	Road from NH-37 to BDM Road via No.1 Dagaon	0.400
7	Extension BDM Road	2.600
8	Road from NH-37 to Ext. BDM via Nepaligaon	1.200
9	Road from Extn. BDM to Nepaligaon	0.500
10	Road from NH-37 to Karoiwati Gaon	0.500
11	Road from NH-37 to Play Ground via Circle Office	0.350
12	Mridul Boruah Path	1.000
13	Sewjipur Ali	1.300
14	Road from Extn. BDM to Town High School via SS Mandir	0.550
15	Road from NH-37 to Mohmaikigaon Ali via Town High School	0.400
16	Road from Rupalim Path to Town High School via Bihutoli	0.400
17	Road from NH-37 to Mohmaikigaon Ali via Assam Oil	0.500
18	Road from NH-37 to Mohmaikigaon Ali via Boragaon	0.850
19	Mohmaikigaon Link Road	0.390
20	Mohmaikigaon Ali	2.590
21	Road from Extn. BDM to Bogolitika	0.650
22	Road from Extn. BDM to Mohmaikia Gaon Namghar Path	0.800
23	Diffoldagaon to Kolakhowa	2.000
24	BDM Road	4.800
25	2 <sup>nd</sup> KM of BDM to Jugalati	1.000
26	Mandal Gaon Ali	1.150
27	Gosainbari Ali	1.100
28	Jyotipur Mohmaiki Gaon Ali	1.400
29	NH-37 to Kandhulimari	3.480
<b>Total length</b>		<b>40.015 kms</b>

Source: Executive Engineer, P.W.D. Bokakhat Territorial Roads Division, Bokakhat

Table 37: Existing Municipal road network in Bokakhat town

Sl.No.	Name of Road	Length (in mts)	Breath (in mts)	Location
1	Robindra Boruah Road	415.00	3.76	Ward -1
2	Bokakhat Civil Hospital Road at Bokakhat Town, Ward No.-1	452.00	7.00	Ward No.-1
3	Uday Nagor Road at Bokakhat Town,	747.00	3.75	Ward -1
4	Mohkuma parishad Road at Ward no.-1	1237.00	3.75	Ward -1
5	Agoratoli Road at Ward No.-1	610.00	3.75	Ward -1
6	Sati Jaymoti Road at Ward No.-1	364.00	3.75	Ward -1
7	Mridupawan Bora Road at Bokakhat Town,	467.00	3.50	Ward -2
8	Jyoti Nagor Road at Ward No.-2	974.00	3.75	Ward -2
9	Koilakhat Nepali Gaon Road at Ward No.-2	460.00	3.75	Ward -2
10	Moniram Dewan Road at Ward No.-2	304.00	3.75	Ward -2
11	CNB college Road at Ward No.-2	471.00	3.75	Ward -2
12	Kailyanpur Mising Gaon Road at Bokakhat	365.00	3.75	Ward -2
13	Anandapur Tea Estate Road at Ward No.-2	426.00	3.75	Ward -2
14	Kalakhua Road at Ward No.-2	358.00	3.75	Ward -2
15	Kalakhua Road to Kalyanpur Road	796.00	3.75	Ward -2
16	1 No. Sati Radhika Road at Bokakhat Town,	448.00	3.75	Ward -3
17	2 No. Sati Radhika Road at Bokakhat Town,	355.00	3.75	Ward -3
18	Joy Chandra Saikia Road at Bokakhat Town,	366.00	3.75	Ward -3
19	Ratna Nath Path at Ward No.-3	405.00	3.75	Ward -3
20	Muhimedhi Path at Ward No.-3	338.00	3.00	Ward -3
21	Bora gaon Road at Bokakhat Town,	929.00	3.75	Ward -4
22	Diffloo Road to Mohmaiki at Bokakhat	434.00	5.00	Ward -4
23	Rupalim Path at Bokakhat Town, Ward No.-4	421.00	3.75	Ward -4
24	Town High School Road at Ward No.-4	407.00	3.75	Ward -4
25	Sidannada Saikia Path at Ward No.-4	460.00	3.00	Ward -4
26	N.H.-37 to Pub Mohmaiki Gaon Road at	750.00	3.75	Ward -4
27	Lakhuti Khunda Road at Ward No.-4	977.00	3.75	Ward -4
28	Hatulla Gaon Road at Ward No.-4	823.00	3.75	Ward -4
29	I No. Koroati Road at Bokakhat Town,	443.00	3.75	Ward -5
30	II No. Koroati Road at Bokakhat Town,	413.00	3.75	Ward -5
31	III No. Koroati Road at Bokakhat Town,	421.00	3.75	Ward -5
32	IV No. Koroati Road at Bokakhat Town,	401.00	3.75	Ward -5
33	Kailakhat Nepali Gaon Road to Seujipar Rd	471.00	3.75	Ward -6
34	Kailakhat Nepali Gaon Road	450.00	3.75	Ward -6
35	Kalakowa Road	463.00	3.75	Ward -6
36	Mridul Boruah Road	697.00	3.75	Ward -6
37	Kailyanpur to Anandapur Tea Estate	368.00	3.75	Ward -6
38	1 No. Seujipar Road at Ward No.-7	600.00	3.75	Ward -7
39	2 No. Seujipar Road at Ward No.-7	700.00	3.75	Ward -7



40	Kakogoshani Than to Mohmaiki Gaon Namghar Road at Ward No.-8	822.00	3.5	Ward -8
41	Diffloo Road to Mohmaiki Gaon Namghar Road at Ward No.-8	707.00	3.75	Ward -8
42	Bogolitika Road at Ward No.-8	606.00	3.75	Ward -8
43	SDO (Civil) office to burahjan L.P. School at Ward No.-8	700.00	3.75	Ward -8
44	Thanuram Saikia Road at Ward No.-8	315.00	3.75	Ward -8
45	Kathalguri Tiniali to Pub-Mohmaiki Gaon Namghar at Ward No.-8	707.00	3.75	Ward -8
46	Lakhuti Khunda Road at Ward No.-9	977.00	3.75	Ward -9
47	Hatulla Gaon Road at Ward No.-9	823.00	3.75	Ward -9
48	Nahorjan Road at Ward No.-9	920.00	500.00	Ward -9
49	Khrista Jyoti School Road at Ward No.-9	577.00	3.75	Ward -9
50	Khrista Jyoti School to Gosainbari Road at Ward No.-9	702.00	3.75	Ward -9
51	Jyotipur Bornamghar to Nahorjan Road at Ward No.-9	524.00	3.75	Ward -9
52	Pub Jyotipur Road at Ward No.-9	385.00	3.00	Ward -9
53	IV No. Da Gaon Road at Ward No.-10	620.00	3.75	Ward -10
54	Kathalboria Gaon Road at Ward No.-10	345.00	3.75	Ward 10
55	Bazboruah Road at Ward No.-10	421.00	3.50	Ward -10
<b>Total length of roads</b>		<b>31137.00 m</b>	<b>or 31.137 kms</b>	

Source: Bokakhat Municipal Board

Most of the roads are around 3.5 metres in width as seen in the table above. However, it is essential to have minimum 5.4 metres of road width to be able to provide minimum 90 cms. of roadside drainage/sewerage network on both sides of the drain.

The Bokakhat Municipality has reported the existence of a total of 0.085 sq.kms of road within the town, of which 0.079 sq.km is all-weather, surfaced roads, while 0.0058 sq.km is unsurfaced, but motorable roads.

Table 38: Status of roads in the Bokakhat Municipality (in sq. kms)

Total length	Surfaced				Unsurfaced		
	Water bound macadam	Black top/Cement concrete	Paver Block Road	Total	Motorable	Non Motorable	Total
0.0850	Nil	0.0302	0.0489	0.0791	0.0058	Nil	0.0058

Source: Bokakhat Municipal Board, 2021

Thus, the municipality has proposed for the improvement, extension and widening of nearly 30 nos of road out of 55 roads in the town.

#### 5.4. Parking

Considering the fact that Bokakhat is a small municipality, parking has mostly developed organically around commercial and institutional areas, as well as with bus stoppages. There is one designated bus stop at the Assam State Transport Corporation stoppage, on the NH-37. Otherwise, all other transport stoppages have developed organically along the national highway.

In the absence of major warehouses and godowns, there is a lack of designated truck terminals. Most of the mini trucks and feeder vehicles plying with goods rely on on-street parking and direct loading/unloading at the retailer shops.

Figure 11: Assam State Transport Corporation (ASTC) Bus Stop on NH 37, Bokakhat



Figure 12: Non-designated Bus Stoppage on the NH 37 near the ASTC Bus Stop, Bokakhat town



Being located along the national highway, Bokakhat witnesses indiscriminate street parking and non-designated bus-stoppages which are a constant nuisance to free flow of traffic along the highway.

Figure 13: On-street car parking at markets and public places on the NH 37, Bokakhat Town



Figure 14: On-street commercial vehicle parking on NH 37, Bokakhat Town



Figure 15: Small Public Transport (Magic) Stand, Diffloo Road, Bokakhat



## 5.5. Street lighting

There are a total of 90 street-light posts covering the road network in the town.

## 5.6. Signage

As the town is very small, not much thought has been provided towards development of the road signage. Less than 10 per cent of the roads are covered under street signage.

## 5.7. Proposals to improve transportation and circulation

No such road network has been proposed except betterment has been recommended. Black topping and a minimum of 7.5 meter ROW need to be maintained at all levels while preparing the local area plan.

The following P.W.D roads are proposed for widening and improvement with drain cum footpath.

Table 39: Road requiring extension and widening

Sl. No.	PWD Road	Length (in kms)	Min. Breadth
1	Diffloo Road (NH 37 to Baliyan)	3.50	Carriage way: 3.75 mts  Right of way: 6 mts.
2	Bokakhat to Dhansiri Mukh	1.26	
3	NH 37 to Naharjan Tea Estate	5.5	
4	Mohmaiki Goan Ali	2.59	
5	Road from NH 37 to playground, via Circle Office	1.40	
6	Road from extension BDM to Nepali gaon	0.35	
7	Road from extension BDM to Town High School via Namghar	0.50	
8	Road from extension BDM to Town High School via Namghar	0.55	
9	Road from NH 37 to extension BDM via Nepali Gaon	1.20	
Total length		16.85	

Source: P.W.D Bokakhat Territorial Road Division

60 Nos. of existing Municipal roads/bye lane (total Length-6838 mtrs.) are proposed to be upgraded interims of Row, capacity and other geometrics as the ward has extended from 4 to 10 wards.

## Chapter 6: Infrastructure, Public Utilities, Services

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### 6.1. Urban Infrastructure

The report on '*Indian Urban Infrastructure and Services, 2011*', prepared for supporting the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) under by the Ministry of Urban Development, Government of India categorized municipal infrastructure and services delivery sectors as follows, -

- i) Water Supply
- ii) Sewerage
- iii) Solid Waste Management
- iv) Storm Water Drainage
- v) Urban Roads
- vi) Urban Transport
- vii) Street lighting
- viii) Traffic Support Infrastructure

To ensure that urbanization happens sustainably, a well-executed delivery of urban services is a must. A sound infrastructure of urban services is necessary for combating diseases and poverty and improving the quality of life. Accordingly, the urban service profile refers to the current state of infrastructure and utility systems in the city. It indicates the adequacy or inadequacy of infrastructure services in terms of coverage, quantity, and quality, and attempts to identify the factors responsible for inadequate development of infrastructure services. It measures the gap between demand and supply of different infrastructure services, and examines the factors that explain the gap.

As per the Report, the service norms for various municipal infrastructure and service delivery are as follows,

Table 40: Summary of service norms for urban areas of India

Water Supply	<ul style="list-style-type: none"> <li>100 per cent individual piped water supply for all households including informal settlements for all cities</li> <li>Continuity of supply: 24x7 water supply for all cities</li> <li>Per capita consumption norm: 135 lpcd for all cities</li> </ul>		
Sewerage	Underground sewerage system for all cities and 100 per cent collection and treatment of waste water		
Solid Waste	100 per cent of solid waste collected, transported, and treated for all cities as per Municipal Solid Waste 2000 Rules		
Urban Roads	City Size Class	Area under Roads (per cent)	Road Density (km per sq. km)
	Class IA	11	12.25
	Class IB	11	12.25
	Class IC	11	12.25
	Class II-IV+	7	7.00
Storm Water Drains	Drain network covering 100 per cent road length on both sides of the road for all cities		
Urban Transport	Rail-based and road-based mass rapid transit system (MRTS) for Class IA and IB cities, and city bus service for other city classes		
Traffic Support Infrastructure	Intelligent transport systems and area traffic control		For Class IA cities
	Vehicular and pedestrian underpasses		For Class I cities
	Parking systems		For Class I cities
	Terminals		For Class I and II cities
	Depots		For Class I, II, and III cities
Street Lighting	<ul style="list-style-type: none"> <li>Illuminance: 35 Lux (35 lumens per sq. km) for all road categories in all cities</li> <li>Spacing between street lights: 40 m for major roads, 45 m for collector roads, and 50 m for access road spaces</li> </ul>		

Source: Report on Indian Urban Infrastructure and Services, MoUD, 2011

## 6.2. Water Supply

Water supply source within the premises for cooking, cleaning and bathing is considered as the most essential need for healthy living. Providing treated water, available 24X7 all year round is a major function of municipalities. It is also a source of revenue for the local bodies. However, no notified town in Assam has complete coverage under water supply schemes. Unfortunately, the existing partial schemes that are present in the few towns are dysfunctional. Therefore, majority of the urban population has to be self-dependent for accessing water.

Table 41: Location of water source, Bokakhat Master Plan Area, 2011(% of HHs)

Location of source	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area
Within premises	95.6%	77.9%	83.5%
Near premises	4.0%	15.5%	11.8%
Away	0.4%	6.7%	4.7%

Source: District Census Handbook, Census of India 2011



Nearly 96 per cent households in the Bokakhat town and 78 percent households in the extended municipal area have water source within the premises. In the total master plan area, about 4.7 per cent households have reported the source of water to be located away from their premises. From the rural areas 6.7 percent households have reported the same, while from the municipal town this figure is less than 1 per cent.

The following table gives the percentage distribution of the sources of drinking water in Bokakhatas per the Census 2011:

Table 42: Main Source of Drinking Water in Bokakhat Master Plan area, 2011(% of HHs)

Sources	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area
Tap-water from treated source	4.0%	3.6%	3.8%
Tap-water from un-treated source	0.5%	0.5%	0.5%
Covered well	0.2%	0.2%	0.2%
Un-covered well	0.1%	0.6%	0.5%
Hand-pump	56.8%	74.0%	68.5%
Tube-well/Bore-hole	38.2%	20.0%	25.8%
Spring	0.0%	0.0%	0.0%
River/Canal	0.0%	0.1%	0.0%
Tank/Pond/Lake	0.0%	0.1%	0.1%
Other Sources	0.2%	0.9%	0.7%

Source: District Census Handbook, Census of India 2011

In the Bokakhat Municipality as well the extended master plan area, there is no successful water supply project covering the entire population. Instead, the need for water is primarily met through private means. Majority of the households, i.e., 68.5 per cent households in the total master plan area source their water from hand-pumps, while 25.8 per cent households have reported the use of tube-wells and boreholes for accessing water. Within the Bokakhat municipal town, 56.8 per cent households and outside the municipality, 74 per cent households in the master plan area depend on hand-pumps. Very few households (3.8%) have access to treated water and thus people have invested their own funds to access water within their premises.

### 6.3. Access to Drainage

For disposal of waste water and other liquid waste from the house, access to drainage from every property is required. Drainage refers to two types of systems: sewerage system and storm water drainage. Sewerage system is designed to carry solid wastes as well, while storm water drainage is mostly for draining flood water from excessive rains and river inundations. It can be either closed or open. If a house has water outlet to carry away the waste water to an underground network, it is termed as closed drainage. If the water outlet is connected to open drains, it is called open drainage. Proper drainage system is crucial to prevent water logging and property damage. There is no sewerage system of drains that carry specifically sanitary wastes and solid wastes to a treatment plant or outlet within any notified town area in Assam. All drains in Assam are thus storm water drains that carry all sorts of waste as well as provide channels for storm water run-off. If open drainage is used to carry sanitary wastes, it can be very unhygienic and pose health risk which unfortunately is the case in most urban areas and hinterlands of Assam.

As per Bokakhat Municipal Board, the municipal area has the following condition of drains,

Table 43: Drains in Bokakhat Municipal Area (in kms)

Drain-type	Total length	Pucca	Kutcha
Storm Water Drains	18.80	13.39	5.41
Drains	5.20	1.51	3.69

Source: Bokakhat Municipal Board

The drainage available in the municipality does not necessarily connect to households, as most drains are built along main roads and arterial roads. A look into the household Census data reveals the true picture of the status of drainage availability for waste water outlet at the household-level.

Table 44: Availability of household level drainage, Bokakhat Master Plan Area, 2011(% of HHs)

Waste water outlet	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area
Closed drainage	8%	4%	5%
Open drainage	20%	13%	16%
No drainage	72%	83%	80%

Source: District Census Handbook, Census of India 2011

As per Census 2011 data, 80 per cent households in the total Bokakhat Master Plan area do not have any access to household level waste water drainage. Of the households having access to drains, 8 per cent have access to closed drains in the Bokakhat town, while only 4 per cent

households have reported access to closed drains in the extended master plan area. In the total master plan area, only 5 per cent are closed drains, while 16 per cent are open drains. They are mostly kutcha unlined roadside drains carrying storm waste to nearby low lying areas. Largely due to insensitivity of the public, garbage is often thrown in these open drains, causing water logging problems during rainy days.

A lack of proper drainage system raises serious health and sanitation issues and causes public discomfort. Modernizing the drainage system is of utmost urgency in to carry Bokakhat in the path of development. A scientific drainage system goes a long way in preventing vector borne diseases and making a healthy city.

#### 6.4. Solid Waste Management

Solid Waste Management refers to the practice of collecting, treating and disposing municipal wastes originating from materials which have lost its purpose and are of no value, in accordance with the principles of public health, engineering, economics, aesthetics, etc. The sources of municipal solid wastes are- (i) residential wastes (ii) commercial wastes (iii) wastes from rituals (iv) de-silting wastes and (v) treated bio-medical wastes. According to the Solid Waste Management Rules, 2016, all the urban local bodies are responsible for Solid Waste Management activities within their respective jurisdiction.

In Bokakhat, the waste collection has been taken up under the Swachh Bharat Mission scheme. A local self-help group, Anjali is engaged in door-to-door collection of garbage from the entire town and transporting to the solid waste processing facility. The details of municipal waste collection in Bokakhat Municipal Area are as follows, -

Table 45: Solid Waste Management scenario in Bokakhat Municipal Town, 2021

Total wards covered	4 (When the town had only 4 wards)
Wards covered under door to door collection	4
Wards covered under Segregation of waste	2
Average waste generation	1.30.ton/day (TPD)
Total waste processing	1 TPD

Source: Bokakhat Municipal Board, 2021

Currently, the solid waste and other garbage are un-scientifically dumped and disposed at an open dumpsite of about 4011sq.m at Latabari village, near Bokakhat town. The land belongs to the

municipality and Under the Swacch Bharat Mission- Urban, the dumping ground is being developed for segregation and processing the waste materials for recycling.

Table 46: Solid waste treatment facility at Bokakhat town

Facility Type	Capacity (TPD)	Type of waste processed	End Product
Centralized Plant	1	Wet	Manure
Decentralized (30 nos.)	0.5	Wet	Manure
Decentralized (3 nos.)	0.8	Dry	Recycled product
MRF	1	Dry	Recycled product

Figure 16: Dumping ground at Bokakhat



## 6.5. Social Infrastructure

The Sustainable Development Goals 2030 aims at ensuring peace and prosperity by addressing social needs of for people globally – specifically, ending poverty and other deprivations must go hand in hand with strategies that improve health and education, to begin with. Access to social infrastructure such as schools and institutions of higher and vocational education, as well as health care ensures a well-developed and progressive community.

### 6.5.1. Educational Facilities

As per Census 2011 data, Bokakhat has 98 educational institutions from primary schools to degree colleges to vocational learning, etc. Of these 71 are schools, ranging from primary to senior

secondary. There are 15 colleges for undertaking graduate education in the town, mostly privately run.

Table 47: Availability of educational institutions (Govt and Private) in Bokakhat Master Plan Area, 2011

(No. of institutions)

Facility	Bokakhat Municipal Area	Master Plan Area (excluding MB area)	Total Master Plan Area
Primary School	20	19	39
Middle School	6	12	18
Secondary School	6	5	11
Senior Secondary	3	0	3
Degree College	13	2	15
Any other higher educational institution	0	0	0
Vocational learning (Short-hand, Type-writing, MS Office, etc)	10	1	11
Others	1	0	1

Source: District Census Handbook, Census 2011

However data provided from the Inspector of Schools, Bokakhat in the table below, provides a more accurate picture of the school education scenario in the Bokakhat Master Plan area.

Table 48: Schools in the Bokakhat Master Plan Area

Sl. No.	Institution	No. of institutions	Govt-run	Privately-run	No. of Students	No. of Teachers	Teacher-Student ratio
1	Primary School	21	17	4	2111	82	1:26
2	Middle School	6	3	3	974	35	1:28
3	High School	13	4 (all Provincial)	9 (3 Venture)	4548	205	1:22
4	Senior Secondary	2	1	1	1054	36	1:29

Source: Inspector of Schools, Bokakhat, 2022

There are 42 schools in the master plan area under study, of which 21 are primary, 6 middle, 13 high and 2 senior secondary schools. Amongst these schools, 25 are government-run and 17 are privately-run institutions. Against the majority of the schools, i.e., 22 of them are in the Bokakhat municipal area, 8 are in Mohmaiki while the remaining schools are spread across the master plan area.

The Right of Children to Free and Compulsory Education (RTE) Act, 2009, in its Schedule lays down PTR for primary and upper primary level. At primary level, the PTR should be 30:1 and at the upper primary level, it should be 35:1. In the Bokakhat Master Plan area the ratios are 26:1 for Primary schools and 28:1 for middle school, which shows that they are doing better than the required standards.

The Rashtriya Madhyamik Siksha Abhiyan (RMSA) framework stipulates that the PTR at the secondary level should be 30:1. Comparing with the Bokakhat Master Plan area is found to be satisfactory, as here the ratios are 22:1 for secondary school and 29:1 for senior secondary schools.

### **6.5.2 Health-care facilities**

An adequate and well-distributed health infrastructure is crucial for efficient and timely response to health crisis. A quality health infrastructure plays a vital role in controlling various health related parameters like life expectancy, mortality rate, etc. to respectable level, and is also found to have a positive impact on speedy recovery from diseases. A sound health system is accessible and delivers high quality care at reasonable price.

The following table shows the number of healthcare institutions in the Bokakhat Master Plan Area.

Table 49: Status of Health Infrastructure in Bokakhat Master Plan Area

Sl. No.	Area	Name of Hospital	Total No of Doctors	Total No of Nurses/Health Workers	Total Nos. of Beds	Patient Treated Indoor (Per day)	Patient Treated Outdoor (Per day)
1	Bokakhat Town, Ward No-1	Swahid Kamala Miri Sub-Divisional Civil Hospital Bokakhat	18	26	100	150	15
2	Bokakhat Master Plan Area	Kolakhowa Sub-Centre	-	-	-	-	-
3	Bokakhat Master Plan Area	Gormurh Sub-Centre	-	-	-	-	-

Source: SDM&HO, Bokakhat BPHC, Bokakhat

Figure 17: Swahid Kamala Miri Civil Hospital, Bokakhat





Swahid Kamala Miri Sub-Divisional Civil Hospital is the most notable hospital in the area. It has 100-beds, 18 doctors and 26 medical support staff. Nearly 15 patients are treated in the Out-patients department of the hospital per day, while 150 patients are treated indoors per day. However, the hospital is struggling with the following issues which maybe addressed by the municipality with project development funds, -

- i) Sewerage disposal system
- ii) Bio-medical waste management
- iii) Parking
- iv) Landscaping of the hospital campus, etc.

Other than the above health institutions, there are 25 registered pharmacies in the Master plan area.

## 6.6. Recreational Facilities

Within the Bokakhat Municipal Town, there are two playgrounds provided by the Bokakhat Municipal Board.

Figure 18: Indira Gandhi Memorial Children Park, Bokakhat



Moreover, there are two water bodies within the municipal area, which may be developed into public recreational spaces, especially the Timow Beel at Kalakhowa. The Timow Beel as seen in the picture, is facing eutrophication and without some intervention, will lose all its fauna. Thus, a proposal for revitalization of the Timow Beel is essential.

Figure 19: Timow Beel at Kalakhowa, Bokakhat Master Plan Area



#### 6.7. Daily markets, weekly haats, etc

The Bokakhat town is developed around the commercial areas serving the residents of the Bokakhat town, as well as the thoroughfare traffic of travellers. These include the following daily markets, -

Figure 20: Bokakhat Daily Market



Under the Bokakhat Municipality, there is only 1 market complex, which is the Bokakhat Daily Market. It covers an area of 73,612 sq.ft (6839 sq.m) from which it is collecting rent of Rs.2,94,448 annually, which may be enhanced far more if developed and diversified more.

#### **6.8. Proposals for social infrastructure**

Firstly, for a busy commercial area like Bokakhat, providing proper market facilities would benefit both the consumers and sellers. Being a centrally located commercial town, the municipality shall revamp the existing market complex, as well as develop more market set-ups to earn better revenues from commercial rent-collection.

## Chapter 7: Land Use Planned Proposals

### 7.1. Delineation of Bokakhat Master Plan Area

An area of 31.43 sq.km is delineated under the proposed Master Plan of Bokakhat for the horizon year of 2041. Along with the existing Bokakhat Municipal town area of about 5.9031 sq.kms, an additional 25.53 sq.kms area is added from eleven surrounding villages as listed below,-

Table 50: List of Villages and Wards constituting the Bokakhat Master Plan Area for 2041

Name of villages/Census Town	Area as per Census 2011 (in sq.kms)	Name of Wards	Area as per Bokakhat Municipal Board (in sq.kms)
Kalakhowa	2.86	Ward 1	0.7056
Balijan	1.37	Ward 2	0.7020
Karaiati	0.92	Ward 3	0.4654
Da-Gaon	1.59	Ward 4	0.4737
Jogigaon	3.42	Ward 5	0.5923
Ikorajan Bagicha	2.88	Ward 6	0.2761
Garahmurh	5.23	Ward 7	0.3570
Ghogara Pathar	0.71	Ward 8	0.6488
Lokhojan Gaon	0.37	Ward 9	1.1537
Ikorajan grant	1.26	Ward 10	0.5285
Mohmaiki Census Town	4.92		
<b>A) Area (in Sq.kms)</b>	<b>25.53</b>	<b>B) Municipal Area (in sq.kms)</b>	<b>5.9031</b>
Total Area (in sq.kms) (A+B)			<b>31.43</b>
<b>Total area considered for Bokakhat Master Plan</b> (considering marginal discrepancies in revenue maps, BMB records and software-based mapping)			<b>31.43 sq.kms</b>

Source: District Census Handbook, Census 2011

### 7.2. Existing Land use pattern

The area delineated for the Bokakhat master plan covers 31.43 sq.kms including the municipal area of 5.9031 sq.kms. The developed area covers 38.82 percent or 12.20 percent of the total Master plan area. Of this residential use covers 25.20 per cent of the total Master plan area.

Recreational use in the form of open fields and playgrounds cover 5.15 percent, transport infrastructure of roads and bus stop covers 4.21 per cent while commercial use forms 2.02 per cent of the existing land use of the delineated master plan area.

The un-developed area of the master plan comprises about 19.22 sq.kms which forms 61.15 per cent of the total master plan area. Much of the newly included village areas are covered with agricultural fields and bamboo groves covering an area of 18.75 sq.kms. This means that nearly 60 per cent of total master plan has not been touched by any development activity. The maining part of the un-developed area is covered by water bodies and rivers which forms 1.51 per cent, which cannot be built-upon but should be conserved.

Table 51: Existing Land Use Area of Bokakhat Master Plan area

Sl. No.	Land Use	Area	Percentage of	
	Category	(Sq. Km.)	Developed land	Total Master plan area
<b>Developed Area</b>				
1	Residential Use	7.92	64.92	25.20
2	Commercial Use	0.63	5.20	2.02
3	Industrial Use	0.10	0.81	0.31
4	Public & Semi-Public Use	0.61	4.98	1.93
5	Recreational Use	1.62	13.26	5.15
6	Transport & Communication	1.32	10.84	4.21
	<b>Total Developed Land</b>	<b>12.20</b>	<b>100</b>	<b>38.82</b>
<b>Un-developed Area</b>				
7	Agriculture and Tea Garden	18.75	-	59.68
8	Water Bodies & Rivers	0.47	-	1.51
	<b>Total Developed Land</b>	<b>19.22</b>	<b>-</b>	<b>61.15</b>
<b>TOTAL AREA</b>		<b>31.43</b>	<b>-</b>	<b>100</b>

Source: Survey conducted by T&CP, Golaghat 2021

### 7.3. Proposed Land use

Following the URDPFI Guidelines by the Ministry of Urban Affairs in 2015, the land use share is revised to adjust the projected population increase and resultant urban developments.

Table 52: Proposed Bokakhat Master Plan Area for 2041

Sl.No.	Land use Category	Area (Sq. Km.)	Percentage to Developed Land	Percentage to Total Area
<b>1</b>	<b>Residential Use</b>	<b>12.77</b>	<b>72.96</b>	<b>40.63</b>
	High Density	5.73		
	Medium Density	4.38		
	Low Density	2.66		
<b>2</b>	<b>Commercial Use</b>	<b>0.89</b>	<b>5.11</b>	<b>2.85</b>
	Retail	0.88		
	CBD	0.1		
<b>3</b>	<b>Industrial Use</b>	<b>0.10</b>	<b>0.56</b>	<b>0.31</b>
	Other Industries	0.09		
<b>4</b>	<b>Public &amp; Semi Public</b>	<b>0.79</b>	<b>4.54</b>	<b>2.53</b>
<b>5</b>	<b>Recreational Use</b>	<b>1.66</b>	<b>9.47</b>	<b>5.27</b>
<b>6</b>	<b>Transport &amp; Communication</b>	<b>1.29</b>	<b>7.36</b>	<b>4.10</b>
	Bus-stop	0.81		
	Roads	0.48		
	<b>Total Developed Land</b>	<b>17.50</b>	<b>100</b>	<b>55.69</b>
<b>7</b>	<b>Agriculture</b>	<b>13.45</b>		<b>42.80</b>
<b>8</b>	<b>Green Belt</b>	<b>0.48</b>		<b>1.51</b>
	<b>TOTAL AREA</b>	<b>31.43</b>		<b>100</b>

Source: Survey conducted by T&CP, Golaghat 2021

Residential use is increased to 31.42 per cent of total Master plan area covering 6.54 sq.kms., while commercial land use share is also increased to 0.31 sq.kms to focus on a Central Business District of 0.1 sq.km and other retail land uses covering 0.21 sq.kms.

Table 53: Comparison between proposed and existing land use in Bokakhat Master Plan Area

Land use	Proposed Land-use Area		Existing Land use Area	
	(in sq.kms)	%	(in sq.kms)	%
Residential Use	7.92	25.20	12.77	40.63
Commercial Use	0.63	2.02	0.89	2.85
Industrial Use	0.10	0.31	0.10	0.31
Public & Semi Public	0.61	1.93	0.79	2.53
Recreational Use	1.62	5.15	1.66	5.27
Transport & Communication	1.32	4.21	1.29	4.10
Agriculture	18.75	59.68	13.45	42.80
Water bodies	0.47	1.51	0.48	1.51

Source: Survey conducted by T&CP, Golaghat 2021

#### 7.4. Identification of Priority sector Projects.

The proposal contained in the Master plan will be implemented by preparing detailed scheme for execution in phase manner. The master plan prepared here is merely the first stage of total programme. It contains the plans and policies for the improvement and development of Bokakhat Master plan up-to 2041.

1. Improvement and widening of roads with street lights and demarcation of notified parking areas for commercial vehicles.
2. Installation of traffic signal points.
3. Development of existing public bus-stand by providing adequate infrastructure facilities.
4. Construction of truck stand.
5. Construction of Vendor & Hawker markets.
6. Construction of Auditorium & Library
7. Construction of Multi-utility building with a provision of marriage hall, conference hall and lodging facility.
8. Construction of Multi-storied shopping complex/ Construction of Multi-utility Building



9. Improvement and development of 30 bedded Civil hospital.
10. Construction of Cold-storage, Ware house etc.
11. Water supply project.
12. Project for solid waste management system.
13. Construction of Administrative block for all government offices under one roof.
14. Beautification and Development of Timow Beel
15. Construction of Town Hall.

The Bokakhat Municipal board and concerned line department have to play an important role for formulation and execution of such schemes/ projects in the master plan area. All the above schemes need to be carried out to make the plan area in to healthy place of living. The specific location for the above project proposals will be finalized in consultation with Civil Administration, Circle officer, Bokakhat Municipality and concern line department.

In the first phase, the schemes/projects like widening & improvement of roads, construction of new roads/bypass lane, provision for required spaces for parks, playgrounds and parking places and improvement and development of market areas can be taken up.

## **7.5. Project Proposals**

### **7.5.1. Multi-storied shopping complex with parking facilities at Bokakhat Daily Market**

Construction of Multi-storied shopping complex/ Construction of Multi-utility Building at Daily Market, Bokakhat is one of the urgent projects to be taken up in Bokakhat. A plot of land measuring 5 Bighas 01 Katha and 16 Lessa is available for this project. A portion of land can be developed for the said project, as well as providing parking facilities.

### **7.5.2. Development and maintenance of Timow Beel as Recreational area**

Timow Beel at ward No.-1 of Bokakhat Town is proposed for beautification and development as recreational centre. The Beel covers an area of 45 Bighas 8 Lessa, which if developed properly shall upgrade the current issues of eutrophication in the Beel as well as serve as a source of revenue for the municipality.

### **7.5.3. Construction of Town Hall**

A plot of land measuring 1 bigha in Ward No.4 of the Bokakhat town is available for construction of a town hall in Bokakhat.

#### **7.5.4. Construction of auditorium cum library behind the current Municipal complex on a plot measuring 4 katha**

#### **7.5.6. Meeting the demand gap of new housing units in the Bokakhat Master Plan area**

As per the Census 2011 analysis, Bokakhat Master Plan area shall have to meet up the housing gap of at least 1184 dwelling units. A revision shall be required every five years to take stock and revise this figure. Municipality shall have to take up housing projects under the various schemes of the government to help meet up this gap on-site for those with dilapidated housing, while community-based project can be taken up through town Planning Schemes to recalibrate existing plots to provide serviced plots in return.

#### **7.5.7. Meeting up the basic infrastructure and services gaps**

Some urban infrastructure gaps in Bokakhat that must be met up for ensuring healthy living conditions in the city and master plan area which includes the following sectors, -

Urban Infrastructure/Service	Standard*	Current gap (HHs in %)	Remarks
Scientific toilets with flush/pour flush toilets	100%	71%	100% HHs have toilets, but 71 % are using unscientific systems of waste disposal
Household connectivity to drainage	100%	80%	5% have access to closed drains, 16% to open drains, while rest have no drains
Storm Water Drains	Should cover 100% road length on both sides of the road	66%	There are 71.172 kms of roads, while only 24 kms of Storm water drains
Water connection from treated source	100% with 135 litres per capita per day (lpcd)	97%	68% HHs use hand-pump and bore-wells, but indiscriminate use of ground water is harmful to the water table in the long run

*\*Standards as per MoUD, as provided in the 'Report on Urban Infrastructure and Service in India', MOUD, 2011*

The municipality must propose to meet up the above gap, along with considering the decadal population growth rate of 1.46 for addressing the horizon population of 70,616 persons, or 14,123 households.

## Chapter 8: Disaster Management Plan

### 8.1. Need for Disaster Management-

Bokakhat falls under Seismic zone v data on disaster occurrence, its effect upon people and its cost to counties, are primary inputs to analyze the temporal and geographical trends in the disaster impact. Disaster losses, provide the basis for identifying where, and to what extent the potentially negative outcomes embedded in the concept of risk is released. They help to understand where, and to whom, disaster risk becomes impact. They also provide the basis for risk assessment processes, a departing point for the application of disaster reducing measures.

Development cannot be suitable unless disaster mitigation is built into development process. Investment in the mitigation are more cost effective than expenditure on relief and rehabilitation, prevention and mitigation contribute to lasting improvement in safety and are essential to integrated disaster management. Disaster response alone is not sufficient as it yields only temporary results at very high cost. So emphasis must be on disaster prevention, mitigation and preparedness, which help in achieving objectives of vulnerability reduction. As per section 40 of Disaster Management Act-2005 that every department of the State Government shall prepare Disaster Management plan.

### 8.2. Plan objectives

The objectives of the district disaster management plan are-

- ❖ Disaster Management in the routine affairs of the department.
- ❖ To provide technical and humanitarian assistance during disaster.
- ❖ Promote and effective disaster of departmental responsibilities during disaster situations.
- ❖ Ensuring safety of departmental infrastructure, human resource and other assets.
- ❖ Ensuring safety of the beneficiaries and others.
- ❖ Speedy restoration after disaster impact.
- ❖ To conduct training and Capacity building for effective prevention, mitigation and response for disaster.

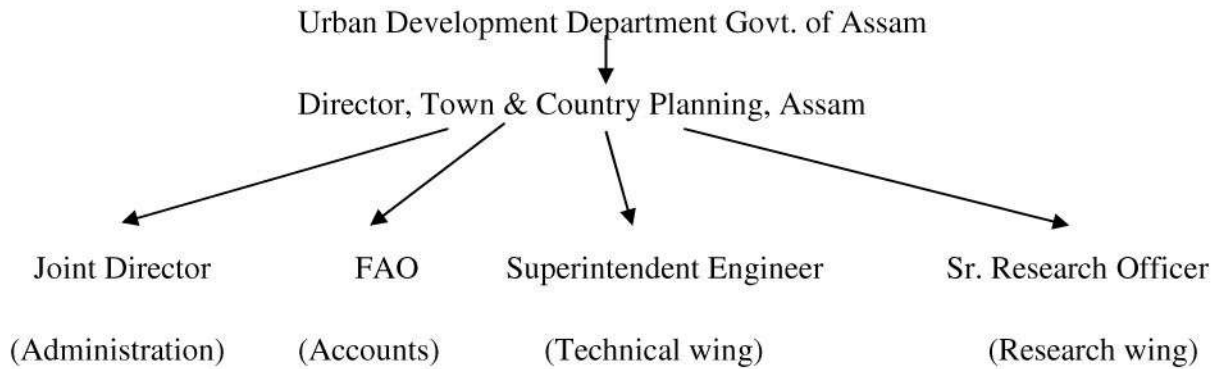
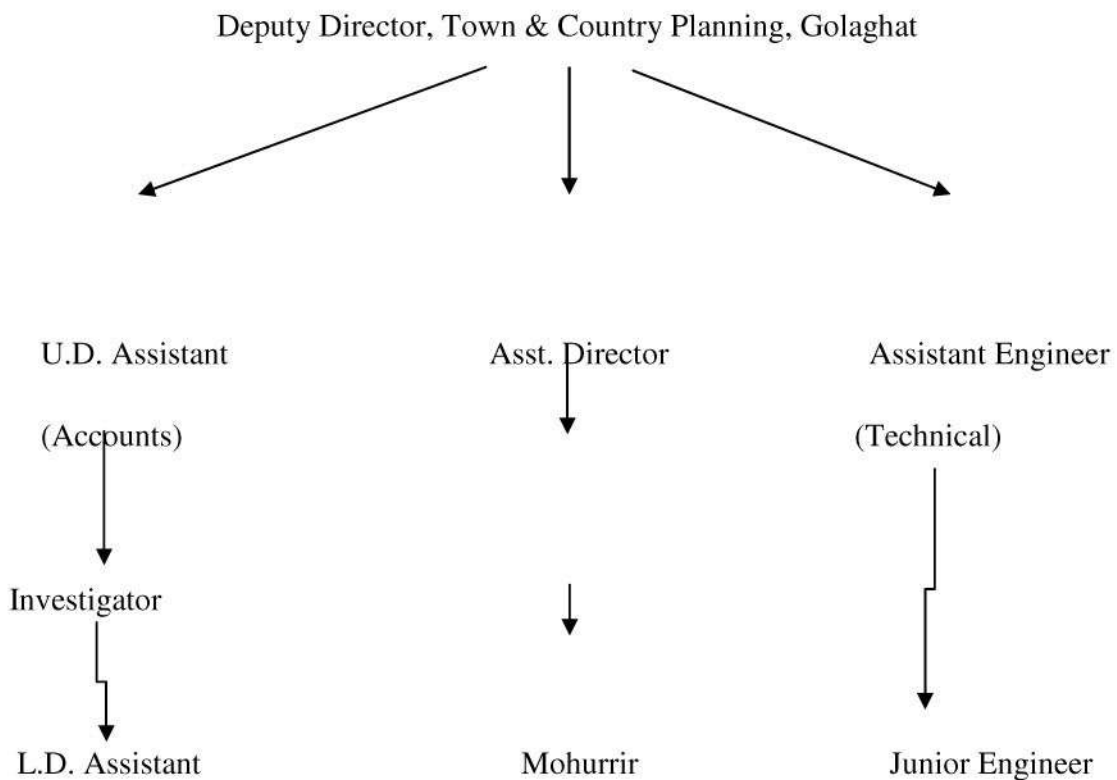
### 8.3. Objectives of Departmental Disaster Management Plan:

The objectives behind the preparation of the Departmental Disaster management plan by the Town & Country Planning, District Office, Golaghat:

- To mitigate impact of natural and manmade disasters through preparedness at the District/town level.
- To provide effective support and resources to all the concerned individuals, groups and departments in disasters.
- To disseminate factual information in a timely, accurate and tactful manner while maintaining necessary confidentiality.
- To develop immediate and long-term support plans for vulnerable areas during disasters.
- To have response system in place to face any eventuality related to disruption of urban infrastructure.
- To ensure active participation with the Government administration, communities, GOs and volunteers at the time of disasters.
- To equip the staff with the knowledge and skills for assessing delineating, strategies and delivering their roles in relation to risk mitigation, prevention and implementation of effective response to the extreme events.
- To enable understanding on the integration of Climatic Change Adaptation (CCA), Disaster Risk Reduction (DRR) and sustainable developments and their associated impacts and challenges in providing infrastructural support to the rescue and rehabilitation team.

To ensure that, standard code of practices such as National Building Code (NBC), Bureau of Indian Standard (BIS) code, Seismic codes etc. are followed by the department for design and construction of infrastructure to minimizing the effects for disasters.

#### **8.4. Profile of the Department:**

**8.4.1. Functional Organization structure at State, District and Local Levels:****At State Level :****District Level :**

**At Local Level :** T&CP, Assam does not have any local office

### 8.5. Inventory of Departmental Resources:

- a) Resource :- Department provide technical support.
- b) Capacity :- Officials to be trained for Earthquake engineering & Rapid Visual Screening etc.
- c) Resources at office level.

Sl. No.	Resources	Quantity	Location
1	Tools & Plants	NIL	At Office
2	Computer Set	NIL	At Office
3	Safety Locker	NIL	At Office
4	Xerox Machine	NIL	At Office

### 8.6. Disaster Management Cycle:

In multi-hazard response plan, the disaster management cycle has a significant role to play. The four stages of disaster cycle have their own importance in terms of their implementation during, after and before the occurrence of any disaster.

#### Pre disaster activities:

1. Policy development and national, State, District, local level disaster organization formation.
2. Vulnerability and capacity assessment.
3. Prevention and mitigation.
4. Preparedness, planning and training.

**Emergency activities:**

1. Warning (beginning before the actual event)
2. Evacuation, search and rescue.
3. Emergency assistance (relief) – food, water, shelter, medical aid.

**Post disaster activities:**

1. Repair and restoration of life lines (power, telecommunications, water supply, transportation)
2. Reconstruction and rehabilitation.

**8.7. Main tasks of the department and possibilities of integration of related disaster management aspects****8.7.1. Main tasks of the Department:**

The primary responsibilities/activities of Town & Country Planning, District Office, Golaghat is to prepare Master Plan for the urban areas of the district. While preparing the Master Plan a few sub-urban areas are also included in the Master Plan to cope up with the increased population load. Very recently it has been decided to incorporate the physical maps like Land use Plan, Zoning Plan, Transportation Plan, etc. in GIS platform. It has also been decided to make the Master Plan more comprehensive and useful in the field of drainage too and accordingly decided to club Physical Master Plan and Drainage Master Plan together.

Some of the important tasks under this department are as follows:

**i) Implementation of Master Plan :**

It is the responsibility of this Office to guide the growth of the urban areas of the District so that un-haphazard growth may not create chaos in future and the growth restricted within the Master Plan boundary. It provides technical guidance to the Implementing Agency in every aspect related with Implementation of Master Plan.



**ii) Enforcement of Zoning Regulations :**

It is the task of this office to enforce Zoning Regulations within the Master Plan Boundary and the town boundary as the case may be, by scrutinising land sale and building permission applications on the basis of Proposed Zoning Plan. The cooperation from the implementing agencies like Golaghat Development Authority, Dergaon Development Authority, Golaghat, Dergaon, Bokakhat, Sarupathar & Bokakhat Municipal Board in the district are highly essential in exercising this role. Presently though scrutiny of land transferred and building permission applications are to be done by the district office T&CP, in the Golaghat district the application are not enrooted through T&CP office and till date no action has been taken by the ULBs to implement the zoning regulation and Assam Notified Urban Areas (other than Guwahati) Building Rules, 2014. Due to non implementation of the Assam Notified Urban Areas (other than Guwahati) Building Rules, 2014 by the ULBs the vary purpose of safety against manmade disaster could not be obtained.

**8.7.2. Possibilities of integration of related disaster management aspects :**

It is difficult to predict the accurate time, location, magnitude of any disasters. So, the departmental construction works should always be concerned with the disasters whether known or unknown or unforeseen. Hence, the construction of a infrastructure should be plan/designed and construct it in conformity with the standard code of practices utilizing sound materials and workmanship. To maintain the quality of the construction works, the laboratory tests plays a vital role. The weak structures are to be identified and should be strengthened by retrofitting through qualified and expert engineers up to the extent possible. More dilapidated structure are to be evacuated and dismantled as per standard guidelines.

- Disaster Vulnerability Maps to be collected from the District Disaster Management Cell and to be incorporated in the Revised Master Plan.
- Strict enforcement of Zoning Regulations will provide safer structure to live in and will also provide ample space for movement of personnel during disaster.
- A systematic and comprehensive Solid Waste Management strategy will reduce the chances of spreading of epidemic as a consequence of disaster to a great extent.
- Preparation of Drainage Master Plan and its implementation is a most to reduce the chance of occurrence of flood.

- All requisite road Cautionary, Mandatory, Informatory signs as per IRC guidelines have to be erected in proper places and a systematic traffic control system is to be provided to minimize occurrence of road accidents.
- Marking of roads will help in effective utilization of road networks during rescue and rehabilitation process.

A District Map is to be displayed in proper place locating all important infrastructures and life line building including a road direction map. Important contact numbers is to be displayed in public place so that the same can be utilised at the time of need.

### 8.8. Office Building:

This Office is running from the Urban Training Centre, Golaghat under Municipal Administration at Second Floor Golaghat Municipal Market Building.

### 8.9. Status of Employees:

Sl. No.	Staff Strength & Pattern	Total	Male	Female
1	Deputy Director	1	1	Nil
2	Asstt. Director	1 Vacant	-	-
3	Asstt. Engineer	1 Vacant	-	-
4	UDA	1 Vacant	-	-
5	LDA	2	2	Nil
6	Junior Engineer	2 vacant	-	-
7	Draftsman	1	1	Nil
8	Investigator	1	1	Nil
9	Mohurrir	1	1	Nil
10	Duftry	1	1	Nil
11	Peon (Grade IV)	2	2	Nil
12	Chowkider (Grade IV)	1	1	Nil
<b>TOTAL :-</b>		<b>15 (5 Vacant)</b>	<b>10</b>	<b>Nil</b>

**8.10. Manpower Office Profile:**

At present there are 10 no. of employees engaged with the District Office in different sectors, cadre and capacity. The details manpower of the office is as below:

Sl. No.	Name of Incumbent	Contact No.	Designation	Role & Responsibility	Responsible Deptt./Cell
1	Sri Bipul Saikia	9435129692	Deputy Director	Overall office management works as DDO	Overall management
2	Sri Prakash Sonowal	9101384250	Draft Man Gr – I	All Mapping works related with preparation of Master Plan. Monthly Progress Report.	Technical Branch
3	Sri Prayas Boruah	9401911280	L.D.A.	Pay Bill & Expenditure statements etc. and to assist UDA.	Establishment Branch
4	Sri Partha Pratim Dutta	9854129596	L.D.A.	Pay Bill & Expenditure statements etc. and to assist UDA.	Establishment Branch
5	Sri Koushik Kumar Thakur	8752901362	Investigator	Survey, Field works	Research Branch
6	Sri Rongki Doley	8822292844	Mohurrir	Survey, Field works	Research Branch
7	Sri Biman Kachari	7086739413	Duftry	Service in Establishment Branch	Establishment Branch
8	Sri Papu Rajkhowa	9678715537	Peon	Dak, Treasury, Bank, Accounts Branch, Service in Establishment Branch	Establishment Branch
9	Sri Rajib Hazarika	8752955294	Peon	Dak, Treasury, Bank, Accounts Branch, Service in Establishment Branch	Establishment Branch
10	Sri Lakhyajit Phukan	9401203292	Chowkider	To be in office 24 hrs. And responsibility beyond office hours.	Establishment Branch

## 8.9. Preparedness & Response System

Department	Response System			
	Preparedness	Pre (after Waning)	During Disaster	Post Disaster
Town & Country Planning	<input type="checkbox"/> Capacity building (training) & sensitization among departmental official & staff <input type="checkbox"/> Assessment of existing department building & other hazard's. <input type="checkbox"/> Identification of vulnerable building (Safety Audit) in towns and necessary direction to Urban local Body's for necessary action. <input type="checkbox"/> Evacuation Plan in high rise and life line building.	<p>Pre preparedness in case of a disaster like flood, earthquake etc. Collection of some construction materials like bamboo, rope, wire, wood, sand, cement bags, first aid kit etc. Will be kept ready.</p> <p>Coordination with District Disaster Management Authority</p> <p>Dissemination of information for early warning to general public with the agencies as DDMA.</p>	<p>During disaster this department will provide technical manpower support to restore essential services and coordinate with DDMA.</p>	<p>After the disaster this department will make assessment of destruction and report to District Admin.</p> <p>Identification of rehabilitation site</p> <p>Modification of Master Plan</p> <p>Preparation of any new Master Plan for affected areas.</p>

## 8.10. Prevention and Mitigation Plan for Multi-Hazards:

Disaster may occur in the forms of flood, urban flooding, cloud bursting, earthquake, cyclone, storms, fire, land slide etc. an effective prevention and mitigation plan will minimize the loss of life and property and accordingly, the flowing aspects have been laid down in this regards.

- All RCC structures have to be designed considering seismic parameter as per BIS code of practice.
- Repair of already damaged structures.
- Construction of causeways in locations those are more vulnerable during breaching of river guide bunds to pass out huge quantity of flood water safely without damaging the communication network.
- Cleaning of drainage structures to regulate the water flow.
- Pre-monsoon desalting of all major drains will be completed by March 31 each year.

- Besides the pre-monsoon desalting of drains, the periodicity of cleaning drains should be worked out, based on the local conditions. The roster of cleaning of such drains should be worked out and strictly followed.
- Inlets to drain the water from the roads into the road side drains will be provided where nonexistent and properly aligned.
- All waste removed both from the major and the minor drains should not be allowed to remain outside the drain for drying, the wet silt should be deposited in to a seamless container and transported as soon as it is taken out from the drain. In exceptional cases, the silt may be allowed to dry for about 4 to 24 hours outside the drain before transporting the semi solid silt for disposal.
- Completion of work will be certified by representatives of local Residents/Municipal ward Commissioner.
- The manual on solid waste brought out by the CPHEEO, MoUD (2000) will be followed in cleaning shallow surface drains.
- De silting of minor drains will be carried out as part of a regular preventive maintenance schedule.
- Cleaning of minor drains will be taken up from the out late to upstream side.
- Ageing systems will be replaced on an urgent basis.
- Every building shall have Rain Water Harvesting as an integral component of the building utility.
- Encroachment on drains and in flood plains will be removed.
- Adequate budget will be provided to take care of the men, materials, equipment and machinery. Special funds will be provided for safety equipment of the personnel carrying out maintenance of man-entry drains, culverts.
- Repairs of existing damaged cross drainage and construction of new one as per requirement.
- Adopt, accept and implement latest technical knowhow and skill in Construction Industry for more acceptability.
- Introduce various codes of practices and recommendations as received from the various competent organizations.
- Arrange for mitigation fund within the department through budgetary provisions.
- A key road map of the district which will guide the supply of materials and equipments to the concerned points from the storage place of various departments.
- Regularly capacity building training for staff to be undertaken for vulnerability assessment of critical lifelines and developed mitigation option at the review meeting with the Urban Local Bodies and Development Authority.

Massive Public Awareness Programmes covering solid waste disposal, problems of encroachment involving elected Public Representative in awareness generations.

### **8.11 Standard Operating Procedure:**

An efficient, well-coordinated and rapid action response mount in the consequence of disaster not only minimizes loss of life and property but also facilitates early recovery of normalcy.

The important ingredients of an effective response system are:

- Integrated institutional arrangements,

- Forecasting and early warning systems;
- Well organised and foolproof communication system;
- Quick deployment of specialized response forces

All the officers and staff must clearly understand their roles and responsibilities and the specific actions they have to take for responding to disaster or threatening disastrous situations.

This SOP lays down, in a comprehensive manner outlining the role, with direction for the specific actions required to be taken by all concerned in the department.

#### **8.12. The objectives of the SOP:**

1. To provide, in a concise and convenient form, a list of major executive actions involved in responding to natural disasters and necessary measures for preparedness, response and relief required to be taken.
2. To ensure that all concerned know the precise measures required of them at each stage.

SOP encompasses the following phases of disaster management for effective and efficient response to natural disasters: -

#### **8.13. Preparedness:**

##### **Emergency Operations Centres (EOCs):**

Control rooms will be set up at the District level.

The objectives of the control rooms shall be to:

1. Receive and process of disaster alerts and warnings from both the towns of the district and other sources and communicate the same to all designated authorities.
2. Monitor emergency operations in and the town areas.
3. Facilitate Coordination with various Organizations, Departments & Agencies during emergencies.
4. Issuing disaster/incident specific information and instructions specific to all concerned.
5. Consolidation, analysis and dissemination of damage, losses and needs assessment data.
6. Forwarding of consolidated reports to all designated authorities.

##### **Location of control room:**

The Control room will be set up in a suitable location preferably in a multi-hazard resistant building at the District level. Control Rooms will be connected with the respective District Control Room of DDMA, State Control Room at the Directorate of Town & Country Planning, Assam. Well trained personal will be engaged in the operation of Control Rooms.

**Incident Response System (IRS):**

As per the Government of India policy on disaster management, IRS will be integrated into the existing system and Incident Response Teams (IRTs) shall be put in place in the District level by imparting training in different facets of incident management. The emphasis will be on the use of technologies and contemporary systems of planning and execution with connectivity to the joint operations room at all levels.

The members of the IRTs will be imparted specialized training in collaboration with the DDMA, Golaghat.

**Pre-contract for Essential Materials/Machineries:**

This Department is not having any equipments/machinery needed for establishing rescue and rehabilitation process and hence the department will enter into pre-contract with the suppliers/contractors for supply of such machineries and when required. A designated officer will be nominated for this purpose.

**Vulnerability assessment:**

The department will make vulnerability assessment and identify potential hazards in and around the towns and will be informed to the local community about their vulnerability to potential hazard through urban local bodies.

**Contract details:**

A comprehensive list of officers involved in disaster management at various levels will be prepared in the district level giving their names, address, telephone numbers, mobile numbers, e-mail address, fax number. The list will be circulated among all concerned.

**Review:**

Annual review of the preparedness measures will be done by the Deputy Director, Town & Country Planning, District Office, Golaghat. Annual review will ensure that all loose ends are tied up so that response during disaster is efficient, effective and time bound.



**Mock Drill :**

Mock exercises will be carried out for testing the effectiveness of all the preparedness measures including man power, equipments etc.

**8.14. Awareness generation:**

The department will carry out Awareness campaign by various means.

**Early warning :**

There are various Nodal agencies for early warning

Cyclone/Storm	Indian Meteorological Department
Heat and Cold Waves	Indian Meteorological Department
Floods	Central water Commission, State Emergency Operation Centre, North Eastern Space Application centre, Dist. Emergency operation Centre.
Forest Fires	Department of Forest

The Control Room Personnel will keep close coordination with these agencies/departments for receiving early warning. They will also regularly check the website of the above organizations. On receipt of early warning, the personnel will inform to all concerned.

**8.15. Emergency Support Function (ESF) :**

1. Name of Head: BIPUL SAIKIA NODAL OFFICER  
DEPUTY DIRECTOR, T&CP, GOLAGHAT (EXECUTION OF SOP)  
MOBILE NO. :- 9435129692
2. PRAKASH SONOWAL, D/M-I,  
T & CP, Golaghat EXECUTION OF SOP  
MOBILE NO. :-9101384250 & SUPERVISION OF ESF 1&2

**8.16. Damage Assessment**

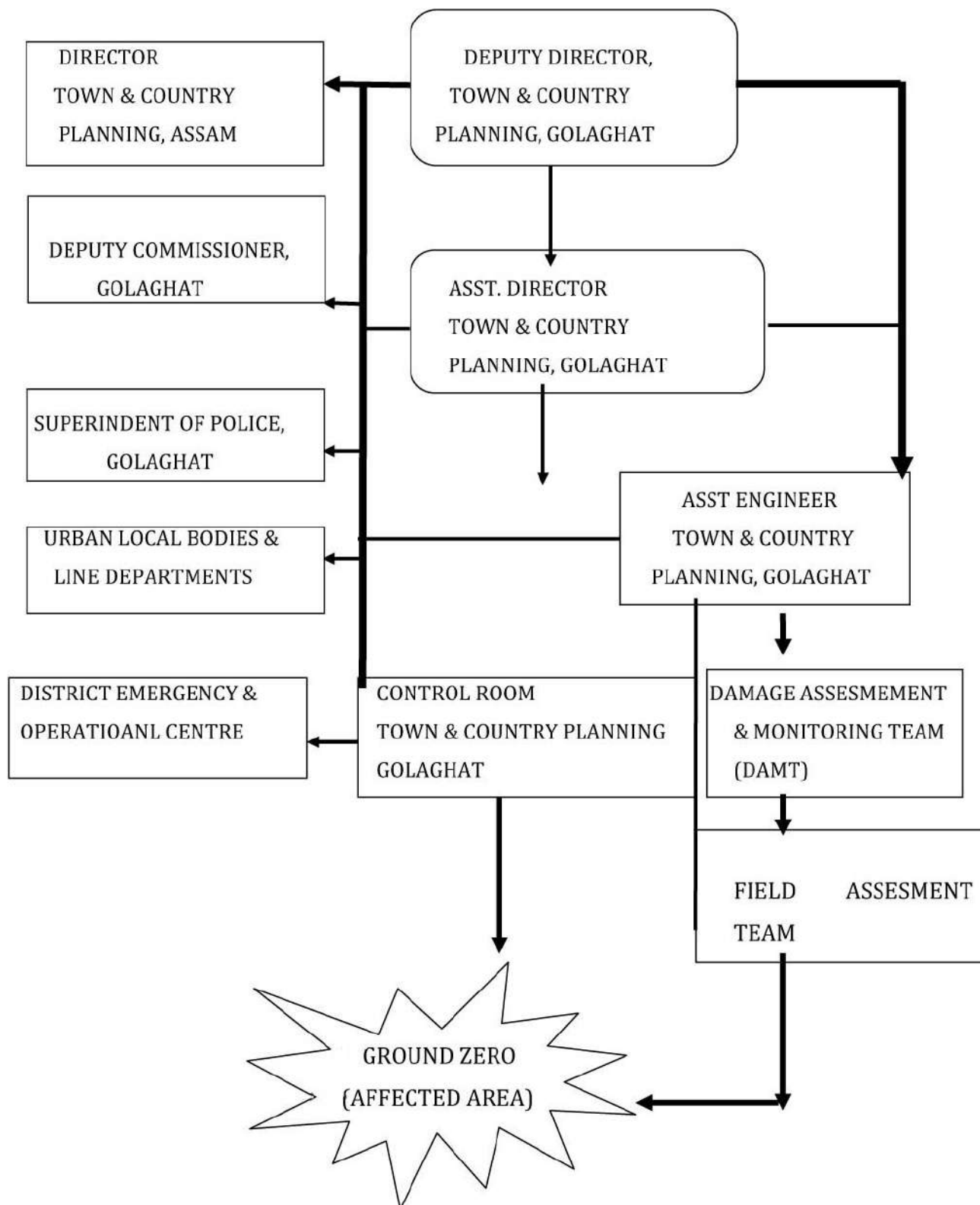
The team consist of technical person of Building Permit Section of Bokakhat Municipal Board as mentioned in ESF 1 will do the rapid damage assessment in post disaster as per Annexure – II.

**8.17. Rapid Assessment Team (RAT)**

Sl. No.	Particulars	Contact No.	Area	Remarks
1	Sri Prakash Sonowal	9101384250	Technical supervisor will give necessary direction for field visit.	The officials will assess the ground situation and assist/report to concern DAMT officials and report to control room.
2	Sri Koushik Kr. Thakur	8752901362		
3	Sri Rongki Doley	8822292844		
4	Sri Biman Kochari	7086739413		

**8.18. ESF 3 Control Room setup & Logistic:**

<p>Sri Prayas Boruah (CONTROL ROOM INCHARGE)</p> <p>Mobile No.- 9401911280</p>	<p>Sri Partha Pratim Dutta</p> <p>Sri Rajib Hazarika-Gr-IV</p>
<p>Sri Prakash Sonowal (DATA COMPILATION &amp; DAILY SITREP TO HEAD &amp; CONCERNED OFFICES)</p> <p>Mobile No.- 9101384250</p>	<p>Sri Koushik Kr. Thakur</p> <p>Sri Biman Kochari</p>
<p>Sri Rongki Doley (LOGISTIC &amp; SAFETY/SECURITY OF OFFICIALS)</p> <p>Mobile No.- 8822292844</p>	<p>Sri Koushik Kr. Thakur</p> <p>Sri Papu Rajkhowa-Gr-IV</p> <p>Sri Rajib Hazarika-Gr-IV</p>

**8.19. Command and Control (CC)**

**8.20. Details of budget provision :-** Budget provision is a must for successful implementation of SOP. Necessary direction to be received from Head office regarding such provision related to Disaster.

